

CHAPTER 1 ADMINISTRATION AND ENFORCEMENT

SECTION 101 SCOPE AND GENERAL REQUIREMENTS

101.1 Title. This code shall be known as the *International Energy Conservation Code* of [NAME OF JURISDICTION], and shall be cited as such. It is referred to herein as "this code."

WSEC Ref	Differences
101.1, 1100	Substantially the same
Description of Differences	
Chapter references Separate residential and non-residential chapters	
SubTAG Recommendation	
Accept IECC language	
Consensus?	
Keep IECC language	

101.2 Scope. This code applies to residential and commercial buildings.

Exception: Existing buildings undergoing repair, alteration, or additions, and change of occupancy shall be permitted to comply with the *International Existing Building Code*.

WSEC Ref	Differences
101.3, 1120	Different, but not easily changed
Description of Differences	
IECC references International Existing Building Code (IEBC) for existing buildings WSEC uses specific application language WSEC exempts temp. growing structures	
SubTAG Recommendation	
<ul style="list-style-type: none">New language needed that expands IECC scope per WSEC 1120 exception (i.e. keep IECC language with modifications)Maintain IECC simplicity and form	
Consensus?	
Delete exception; add exception for temp growing structures	

101.3 Intent. This code shall regulate the design and construction of buildings for the effective use of energy. This code is intended to provide flexibility to permit the use of innovative approaches and techniques to achieve the effective use of energy. This code is not intended to abridge safety, health or environmental requirements contained in other applicable codes or ordinances.

WSEC Ref	Differences
101.2, 1110	Different, but can be easily changed
Description of Differences	
Separate residential and non-residential chapters IECC does not define or state a "purpose" WSEC and IECC interchange "purpose and "intent" WSEC residential flexibility is defined through description of compliance options WSEC references altered buildings	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

101.4 Applicability.

101.4.1 Existing buildings. Except as specified in this chapter, this code shall not be used to require the removal, alteration or abandonment of, nor prevent the continued use and maintenance of, an existing building or building system lawfully in existence at the time of adoption of this code.

WSEC Ref	Differences
101.3.2, 1130	Different, but not easily changed
Description of Differences	
IECC only/WSEC only language WSEC allows greater jurisdiction flexibility through simple building official interpretation of situations re economic impracticality WSEC also allows non-complying residential additions less than 750 ft ² to make up the deficiency in the existing house.	
SubTAG Recommendation	
<ul style="list-style-type: none">New language. Integrate WSEC language with IECC to ensure compliance process, flexibility and cost effectiveness.	
Consensus?	
No consensus reached	

101.4.2 Historic buildings. Any building or structure that is Listed in the State or National Register of Historic Places; designated as a historic property under local or state designation law or survey; certified as a contributing resource with a National Register Listed or locally designated historic district; or with an opinion or certification that the property is eligible to be Listed on the National or State Registers of Historic Places either individually or as a

contributing building to a historic district by the State Historic Preservation Officer or the Keeper of the National Register of Historic Places, are exempt from this code.

WSEC Ref	Differences
101.3.2.2, 1134	Different, but can easily be changed
Description of Differences	
IECC exempts all 'historic buildings' WSEC allows latitude for the building official to affect reasonable requirements	
SubTAG Recommendation	
Substitute WSEC language via amendment	
Consensus?	
Substitute WSEC language	

101.4.3 Additions, alterations, renovations or repairs. Additions, alterations, renovations or repairs to an existing building, building system or portion thereof shall conform to the provisions of this code as they relate to new construction without requiring the unaltered portion(s) of the existing building or building system to comply with this code. Additions, alterations, renovations, or repairs shall not create an unsafe or hazardous condition or overload existing building systems.

Exceptions: The following need not comply provided the energy use of the building is not increased.

1. Storm windows installed over existing fenestration.
2. Glass only replacements in an existing sash and frame.
3. Existing ceiling, wall or floor cavities exposed during construction provided that these cavities are filled with insulation.
4. Construction where the existing roof, wall or floor cavity is not exposed.

WSEC Ref	Differences
101.3.2.1, 101.3.2.4, 101.3.2.5, 101.3.2.6, 101.3.2.7, 101.3.2.8, 1131, 1132, 1132.1, 1132.2, 1132.3	IECC only /WSEC only language

Description of Differences
Format between WSEC and IECC sections is nearly exclusive Building envelope exceptions are similar Does not address mechanical and lighting alterations WSEC requires insulation when reroofing under certain conditions
SubTAG Recommendation
New language Substitute WSEC language via amendment Alter format for simplicity
Consensus?
Add WSEC language

101.4.4 Change in occupancy. Buildings undergoing a change in occupancy that would result in an increase in demand for either fossil fuel or electrical energy shall comply with this code.

WSEC Ref	Differences
101.3.2.3, 1133	Different, but can be easily changed
Description of Differences	
WSEC residential and non-residential sections	
SubTAG Recommendation	
Keep IECC language Add WSEC language re residential change of occupancy	
Consensus?	
No consensus	

101.4.5 Mixed occupancy. Where a building includes both residential and commercial occupancies, each occupancy shall be separately considered and meet the applicable provisions of Chapter 4 for residential and Chapter 8 for commercial.

WSEC Ref	Differences
101.3.3	IECC only / WSEC only language
Description of Differences	
IECC references Ch. 4 and Ch. 8 for application	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

101.5 Compliance. Residential buildings shall meet the provisions of Chapter 4. Commercial buildings shall meet the provisions of Chapter 8.

WSEC Ref	Differences
None	IECC only
Description of Differences	
IECC description of residential and non-residential chapters for compliance use	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

101.5.1 Compliance materials. The code official shall be permitted to approve specific computer software, worksheets, compliance manuals and other similar materials that meet the intent of this code.

WSEC Ref	Differences
None	IECC only
Description of Differences	
IECC allowance for building officials to approve for use software and other materials that meet the intent of the code	
SubTAG Recommendation	
New language Keep IECC language	
Consensus?	
No consensus	

101.5.2 Low energy buildings. The following buildings, or portions thereof, separated from the remainder of the building by building thermal envelope assemblies complying with this code shall be exempt from the building thermal envelope provisions of this code.

1. Those with a peak design rate of energy usage less than 3.4 Btu/h.ft² (10.7 W/m²) or 1.0 watt/ft² (10.7 W/m²) of floor area for space conditioning purposes.
2. Those that do not contain conditioned space.

WSEC Ref	Differences
101.3.1, 101.3.1.1, 101.3.1.2, 101.3.1.3, 1310	IECC only / WSEC only language

Description of Differences
WSEC provides specific exemptions WSEC references code sections and chapters Similar residential peak design rate exemption
SubTAG Recommendation
Keep IECC language Substitute WSEC language via amendment Add language on semi-heated spaces
Consensus?
No consensus

SECTION 102 MATERIALS, SYSTEMS AND EQUIPMENT

102.1 Identification. Materials, systems and equipment shall be identified in a manner that will allow a determination of compliance with the applicable provisions of this code.

WSEC Ref	Differences
102.1, 102.2, 1142.1, 1142.2	Substantially the same
Description of Differences	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC Language	

102.1.1 Building thermal envelope insulation. An R-value identification mark shall be applied by the manufacturer to each piece of building thermal envelope insulation 12 inches (305 mm) or greater in width. Alternately, the insulation installers shall provide a certification Listing the type, manufacturer and R-value of insulation installed in each element of the building thermal envelope. For blown or sprayed insulation (fiberglass and cellulose), the initial installed thickness, settled thickness, settled R-value, installed density, coverage area and number of bags installed shall be listed on the certification. For sprayed polyurethane foam (SPF) insulation, the installed thickness, ~~density, coverage area, R-value and compressive strength of the areas covered and R-value of installed thickness~~ shall be listed on the certification. The insulation installer shall sign, date and post the certification in a conspicuous location on the job site.

WSEC Ref	Differences
502.1.4.1	Substantially the same
Description of Differences	
IECC requires insulation identification marks, certifications, R-values, type, manufacturer	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC Language	

102.1.1.1 (Supp) Blown or sprayed roof/ceiling insulation. The thickness of blown in or sprayed roof/ceiling insulation (fiberglass or cellulose) shall be written in inches (mm) on markers that are installed at least one for every 300 ft² (28 m²) throughout the attic space. The markers shall be affixed to the trusses or joists and marked with the minimum initial installed thickness with numbers a minimum of 1 inch (25 mm) in height. Each marker shall face the attic access opening. Spray polyurethane foam thickness and installed R-value shall be listed on certification provided by the insulation installer.¹

WSEC Ref	Differences
502.1.4.1	Substantially the same
Description of Differences	
WSEC provides more detailed language	
SubTAG Recommendation	
Substitute the WSEC language via amendment	
Keep IECC language	
Consensus?	
Keep IECC language	

102.1.2 Insulation mark installation. Insulating materials shall be installed such that the manufacturer's R-value mark is readily observable upon inspection.

WSEC Ref	Differences
502.1.4.1	Substantially the same
Description of Differences	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

102.1.3 Fenestration product rating. U-factors of fenestration products (windows, doors and skylights) shall be determined in accordance with NFRC 100 by an accredited, independent laboratory, and labeled and certified by the manufacturer. Products lacking such a labeled *U-factor* shall be assigned a default *U-factor* from Table 102.1.3(1) or 102.1.3(2). The solar heat gain coefficient (SHGC) of glazed fenestration products (windows, glazed doors and skylights) shall be determined in accordance with NFRC 200 by an accredited, independent laboratory, and labeled and certified by the manufacturer. Products lacking such a labeled SHGC shall be assigned a default SHGC from Table 102.1.3(3).

WSEC Ref	Differences
502.1.5, 502.1.5.1, 502.5.2	Different, but not easily changed
Description of Differences	
WSEC is detailed in application and references other WSEC code tables and sections	
IECC is not detailed and references other IECC tables and sections	
No small business exemption	
SubTAG Recommendation	
New language	
Consensus?	
Amendment necessary	

¹ EC1

TABLE 102.1.3(1)
DEFAULT GLAZED FENESTRATION U-FACTOR

FRAME TYPE	SINGLE PANE	DOUBLE PANE	SKYLIGHT	
			SINGLE	DOUBLE
Metal	1.20	0.80	2.00	1.30
Metal with Thermal Break	1.10	0.65	1.90	1.10
Non-Metal or Metal Clad	0.95	0.55	1.75	1.05
Glazed Block	0.60			

WSEC Ref	Differences
Tables 10-6 10-6A, 10-6B	
Description of Differences	
Does not address small businesses More stringent than WA tables	
SubTAG Recommendation	
Keep IECC table Add small business default table from WSEC Substitute WSEC defaults	
Consensus?	
No consensus	

TABLE 102.1.3(2) DEFAULT DOOR U.FACTORS

Door Type	U-factor
Uninsulated Metal	1.20
Insulated Metal	0.60
Wood	0.50
Insulated, non-metal edge, max 45% glazing, any glazing double pane	0.35

WSEC Ref	Differences
Table 10-6, 10-6C	
Description of Differences	
More default options in WSEC for residential Nonres is substantially the same	
SubTAG Recommendation	
Keep IECC Table	
Consensus?	
Keep IECC table	

TABLE 102.1.3(3)
DEFAULT GLAZED FENESTRATION SHGC

Single Glazed		Double Glazed		Glazed Block
Clear	Tinted	Clear	Tinted	
0.7 0.8	0.6 0.7	0.6 0.7	0.5 0.6	0.6

WSEC Ref	Differences
	IECC only
Description of Differences	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

² EC2

102.2 Installation. All materials, systems and equipment shall be installed in accordance with the manufacturer's installation instructions and the *International Building Code*.

WSEC Ref	Differences
502.1.4.1	Different, but can be easily changed
Description of Differences	
IECC is broad and inclusive Only WSEC section for comparison found relates to wall insulation	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

102.2.1 Protection of exposed foundation insulation. Insulation applied to the exterior of basement walls, crawlspace walls and the perimeter of slab-on-grade floors shall have a rigid, opaque and weather-resistant protective covering to prevent the degradation of the insulation's thermal performance. The protective covering shall cover the exposed exterior insulation and extend a minimum of 6 inches (153 mm) below grade.

WSEC Ref	Differences
502.1.4.8, 502.1.4.10	Different, but can be easily changed
Description of Differences	
IECC provides separate definitive direction WSEC lacks detail	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

102.3 Maintenance information. Maintenance instructions shall be furnished for equipment and systems that require preventive maintenance. Required regular maintenance actions shall be clearly stated and incorporated on a readily accessible label. The label shall include the title or publication number for the operation and maintenance manual for that particular model and type of product.

WSEC Ref	Differences
102.2, 1142.2	Substantially the same
Description of Differences	

SubTAG Recommendation
Keep IECC language
Consensus?
Keep IECC language

SECTION 103 ALTERNATE MATERIALS-METHOD OF CONSTRUCTION, DESIGN OR INSULATING SYSTEMS

103.1 General. This code is not intended to prevent the use of any material, method of construction, design or insulating system not specifically prescribed herein, provided that such construction, design or insulating system has been approved by the code official as meeting the intent of this code.

103.1.1 Above code programs. The code official or other authority having jurisdiction shall be permitted to deem a national, state or local energy efficiency program to exceed the energy efficiency required by this code. Buildings approved in writing by such an energy efficiency program shall be considered in compliance with this code.

WSEC Ref	Differences
103, 1141.3	Substantially the same
Description of Differences	
WSEC qualifies the issue in more detail and better compares to the IRC/IBC	
SubTAG Recommendation	
Substitute WSEC language via amendment Keep IECC language WSEC does not reference above code program	
Consensus?	
Substitute WSEC language	

SECTION 104 CONSTRUCTION DOCUMENTS

104.1 General. Construction documents and other supporting data shall be submitted in one or more sets with each application for a permit. The code official is authorized to require necessary construction documents to be prepared by a registered design professional.

Exception: The code official is authorized to waive the requirements for construction documents or other supporting data if the code official determines they are not necessary to confirm compliance with this code.

WSEC Ref	Differences
104.1, 1141.1	Substantially the same
Description of Differences	
Format. IECC uses an exception to state essentially the same as the WSEC WSEC more specific to Washington	
SubTAG Recommendation	
Substitute WSEC language via amendment Keep IECC language	
Consensus?	
Keep IECC language	

104.2 Information on construction documents. Construction documents shall be drawn to scale upon suitable material. Electronic media documents are permitted to be submitted when approved by the code official. Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed, and show in sufficient detail pertinent data and features of the building, systems and equipment as herein governed. Details shall include, but are not limited to, insulation materials and their R-values; fenestration U-factors and SHGCs; system and equipment efficiencies, types, sizes and controls; duct sealing, insulation and location; and air sealing details.

WSEC Ref	Differences
104.2, 1141.2	Different, but not easily changed
Description of Differences	
WSEC residential allows for self-certified plan review List of examples varies between WSEC/IECC Missing lighting and mechanical language	
SubTAG Recommendation	
Keep IECC language Incorporate language from 1141.2	
Consensus?	
Amend with language from 1141.2	

SECTION 105 INSPECTIONS

105.1 General. Construction or work for which a permit is required shall be subject to inspection by the code official.

WSEC Ref	Differences
105.1, 1143.1	Substantially the same
Description of Differences	
WSEC requires work to remain accessible within this section, IECC has this portion in Sec. 105.2. IECC Format of IECC may be more clear WSEC text appears better in detail than IECC, but use of combined Res./Non-Res. WSEC inspections sections in IECC would require a re-write of those sections.	
SubTAG Recommendation	
New language (recommend review of WSEC for possible combination of Res./Non-Res. sections and substitution via amendment.) Keep IECC language in both sections 105.1 and 105.2	
Consensus?	
Keep IECC language	

105.2 Required approvals. No work shall be done on any part of the building beyond the point indicated in each successive inspection without first obtaining the written approval of the code official. No construction shall be concealed without being inspected and approved.

WSEC Ref	Differences
105.2, 1143.2, 1143.2.1, 1143.2.2, 1143.2.3	Different, but not easily changed
Description of Differences	
Format of IECC is simpler WSEC text appears better in detail than IECC, but use of combined Res./Non-Res. WSEC inspections sections in IECC would require a re-write of those sections.	
SubTAG Recommendation	
New language (recommend review of WSEC for possible combination of Res./Non-Res. sections and substitution via amendment.) Keep IECC language in both sections 105.1 and 105.2	
Consensus?	
Keep IECC language	

SECTION 106 VALIDITY

106.1 General. If a portion of this code is held to be illegal or void, such a decision shall not affect the validity of the remainder of this code.

WSEC Ref	Differences
105.2.1	WSEC only
Description of Differences	
WSEC requires a wall insulation and sheet or film type vapor retarder material to be done and approved prior to wall covering being installed.	
SubTAG Recommendation	
Substitute WSEC language via amendment Do not amend IECC	
Consensus?	
No consensus	

105.3 Final inspection. The building shall have a final inspection and not be occupied until approved.

WSEC Ref	Differences
None	IECC only
Description of Differences	
A required Final is not in the WSEC	
SubTAG Recommendation	
Delete via amendment (Recommendation to keep this section could be made if the section were optional.) Keep IECC language	
Consensus?	
No consensus	

105.4 Reinspection. A building shall be reinspected when determined necessary by the code official.

WSEC Ref	Differences
105.3, 1143.3	Substantially the same
Description of Differences	
WSEC Non-Res. includes the ability to charge a re-inspection fee. If the IECC is adopted as referenced to the IRC/IBC the inspection fee is not needed here.	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

WSEC Ref	Differences
109, 1161, 1162	Substantially the same
Description of Differences	
WSEC Non-Res. is better defined and appears more complete	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

SECTION 107 REFERENCED STANDARDS

107.1 General. The standards, and portions thereof, referred to in this code and Listed in Chapter 10 shall be considered part of the requirements of this code to the extent of such reference.

WSEC Ref	Differences
None comparable	IECC only
Description of Differences	
SubTAG Recommendation	
Keep IECC language (subject to review of Ch. 10)	
Consensus?	
Keep IECC language (subject to review of Ch 10)	

107.2 Conflicting requirements. Where the provisions of this code and the referenced standards conflict, the provisions of this code shall take precedence.

WSEC Ref	Differences
None comparable	IECC only
Description of Differences	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

WSEC Ref	Differences
108, 1150	WSEC only
Description of Differences	
WSEC has appropriate RCW and WAC references, but also has reference to sections within itself making use in the IECC more difficult. IECC only refers to conflicts with referenced standards Several language conflicts	
SubTAG Recommendation	
Add WSEC language via amendment	
Consensus?	
Add New Section 108 with WSEC language	

WSEC Ref	Differences
106	WSEC only
Description of Differences	
IECC does not address violations of the code provisions	
SubTAG Recommendation	
Add WSEC language via amendment	
Consensus?	
Add New Section 108 with WSEC language	

WSEC Ref	Differences
107	WSEC only
Description of Differences	
IECC does not address jurisdictional liability (hold harmless, sovereign immunity)	
SubTAG Recommendation	
Add WSEC language via amendment	
Consensus?	
Add New Section 109 with WSEC language	

CHAPTER 2 DEFINITIONS

SECTION 201 GENERAL

201.1 Scope. Unless stated otherwise, the following words and terms in this code shall have the meanings indicated in this chapter.

WSEC Ref	Differences
201	Substantially the same
Description of Differences	
Editorial	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

201.2 Interchangeability. Words used in the present tense include the future; words in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural includes the singular.

WSEC Ref	Differences
	IECC only
Description of Differences	
Addresses tense, gender and plural	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

201.3 Terms defined in other codes. Terms that are not defined in this code but are defined in the *International Building Code*, *ICC Electrical Code*, *International Fire Code*, *International Fuel Gas Code*, *International Mechanical Code*, *International Plumbing Code*, or the *International Residential Code* shall have the meanings ascribed to them in those codes.

WSEC Ref	Differences
201.2, 202	Substantially the same
Description of Differences	
IECC references other codes; WSEC contains references for a few specific terms as well as a general reference to other codes	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

201.4 Terms not defined. Terms not defined by this chapter shall have ordinarily accepted meanings such as the context implies.

WSEC Ref	Differences
201.1	Different but can be easily changed
Description of Differences	
WSEC also refers to Webster's	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

SECTION 202 GENERAL DEFINITIONS

ABOVE GRADE WALL. A wall more than 50 percent above grade and enclosing conditioned space. This includes between-floor spandrels, peripheral edges of floors, roof and basement knee walls, dormer walls, gable end walls, walls enclosing a mansard roof, and skylight shafts.

ACCESSIBLE. Admitting close approach as a result of not being guarded by locked doors, elevation or other effective means (see "Readily accessible").

ADDITION. An extension or increase in the conditioned space floor area or height of a building or structure.

ALTERATION. Any construction or renovation to an existing structure other than repair or addition that requires a permit. Also, a change in a mechanical system that involves an extension, addition or change to the arrangement, type or purpose of the original installation that requires a permit.

APPROVED. ~~Acceptable to the code official.~~
Approval by the code official as a result of investigation and tests conducted by him or her, or by reason of accepted principles or tests by nationally recognized organizations.³

AUTOMATIC. Self-acting, operating by its own mechanism when actuated by some impersonal influence, as, for example, a change in current strength, pressure, temperature or mechanical configuration (see "Manual").

³ EC6

BASEMENT WALL. A wall 50 percent or more below grade and enclosing conditioned space.

BUILDING. Any structure used or intended for supporting or sheltering any use or occupancy.

BUILDING THERMAL ENVELOPE. The basement walls, exterior walls, floor, roof, and any other building element that enclose conditioned space. This boundary also includes the boundary between conditioned space and any exempt or unconditioned space.

CODE OFFICIAL. The officer or other designated authority charged with the administration and enforcement of this code, or a duly authorized representative.

COMMERCIAL BUILDING. For this code, all buildings that are not included in the definition of Residential Buildings.

CONDITIONED FLOOR AREA. The horizontal projection of the floors associated with the conditioned space.

CONDITIONED SPACE. An area or room within a building being heated or cooled, containing uninsulated ducts, or with a fixed opening directly into an adjacent conditioned space.

CRAWLSPACE WALL. The opaque portion of a wall that encloses a crawl space and is partially or totally below grade.

CURTAIN WALL. Fenestration products used to create an external non-load bearing wall that is designed to separate the exterior and interior environments.⁴

DUCT. A tube or conduit utilized for conveying air. The air passages of self-contained systems are not to be construed as air ducts.

DUCT SYSTEM. A continuous passageway for the transmission of air that, in addition to ducts, includes duct fittings, dampers, plenums, fans and accessory air-handling equipment and appliances.

DWELLING UNIT. A single unit providing complete independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking and sanitation.

ECONOMIZER, AIR. A duct and damper arrangement and automatic control system that allows a cooling system to supply outside air to

reduce or eliminate the need for mechanical cooling during mild or cold weather.

ECONOMIZER, WATER. A system where the supply air of a cooling system is cooled indirectly with water that is itself cooled by heat or mass transfer to the environment without the use of mechanical cooling.

ENERGY ANALYSIS. A method for estimating the annual energy use of the proposed design and standard reference design based on estimates of energy use.

ENERGY COST. The total estimated annual cost for purchased energy for the building functions regulated by this code, including applicable demand charges.

ENERGY RECOVERY VENTILATION SYSTEM. Systems that employ air-to-air heat exchangers to recover energy from exhaust air for the purpose of preheating, precooling, humidifying or dehumidifying outdoor ventilation air prior to supplying the air to a space, either directly or as part of an HVAC system.

ENERGY SIMULATION TOOL. An approved software program or calculation-based methodology that projects the annual energy use of a building.

EXTERIOR WALL. Walls including both above grade walls and basement walls.

ENTRANCE DOOR. Fenestration products used for ingress, egress and access in non-residential buildings, including, but not limited to, exterior entrances that utilize latching hardware, automatic closers and contain over 50% glass specifically designed to withstand heavy use and possibly abuse.⁵

FACTORY-ASSEMBLED GLAZED FENESTRATION PRODUCT. Fenestration products that are shipped to the field as factory-assembled units comprised of specified frame and glazing components including operable and fixed windows, and skylights.

FENESTRATION. Skylights, roof windows, vertical windows (fixed or moveable), opaque doors, glazed doors, glazed block, and combination opaque/glazed doors. Fenestration includes products with glass and non-glass glazing materials.

HEAT TRAP. An arrangement of piping and fittings, such as elbows, or a commercially available heat trap that prevents thermosyphoning of hot water during standby periods.

⁴ EC63

⁵ EC63

HEATED SLAB. Slab-on-grade construction in which the heating elements, hydronic tubing, or hot air distribution system is in contact with, or placed within or under the slab.

HUMIDISTAT. A regulatory device, actuated by changes in humidity, used for automatic control of relative humidity.

INFILTRATION. The uncontrolled inward air leakage into a building caused by the pressure effects of wind or the effect of differences in the indoor and outdoor air density or both.

INSULATING SHEATHING. An insulating board with a core material having a minimum R-value of R-2.

LABELED. Devices, equipment, or materials to which have been affixed a label, seal, symbol or other identifying mark of a nationally recognized testing laboratory, inspection agency or other organization concerned with product evaluation that maintains periodic inspection of the production of the above-labeled items that attests to compliance with a specific standard.

LISTED. Equipment, appliances, assemblies or materials included in a list published by an approved testing laboratory, inspection agency or other organization concerned with product evaluation that maintains periodic inspection of production of Listed equipment, appliances, assemblies or material, and whose Listing states either that the equipment, appliances, assemblies, or material meets nationally recognized standards or has been tested and found suitable for use in a specified manner.

LOW-VOLTAGE LIGHTING. Lighting equipment powered through a transformer such as a cable conductor, a rail conductor and track lighting.

MANUAL. Capable of being operated by personal intervention (see "Automatic")

PROPOSED DESIGN. A description of the proposed building used to estimate annual energy use for determining compliance based on total building performance.

READILY ACCESSIBLE. Capable of being reached quickly for operation, renewal or inspection without requiring those to whom ready access is requisite to climb over or remove obstacles or to resort to portable ladders or access equipment (see "Accessible").

REPAIR. The reconstruction or renewal of any part of an existing building.

RESIDENTIAL BUILDING. For this code, includes R-3 buildings, as well as R-2 and R-4 buildings three stories or less in height above grade.

R-VALUE (THERMAL RESISTANCE). The inverse of the time rate of heat flow through a body from one of its bounding surfaces to the other surface for a unit temperature difference between the two surfaces, under steady state conditions, per unit area ($h' \text{ ff} \cdot ^\circ\text{F/Btu}$) [$(\text{m}^2 \cdot \text{K})/\text{W}$].

ROOF ASSEMBLY. A system designed to provide weather protection and resistance to design loads. The system consists of a roof covering and roof deck or a single component serving as both the roof covering and the roof deck. A roof assembly includes the roof covering, underlayment, roof deck, insulation, vapor retarder and interior finish.

SCREW LAMP HOLDERS. A lamp base that requires a screw-in-type lamp, such as a compact-fluorescent, incandescent, or tungsten-halogen bulb.

SERVICE WATER HEATING. Supply of hot water for purposes other than comfort heating.

SITE-BUILT GLAZED PRODUCT. Fenestration products that are designed to be field glazed or field assembled units comprised of specified frame and glazing components including operable and fixed windows, curtain walls, window walls, storefronts, sloped glazing and skylights.

SKYLIGHT. Glass or other transparent or translucent glazing material installed at a slope of 15 degrees (0.26 rad) or more from vertical. Glazing material in skylights, including unit skylights, solariums, sunrooms, roofs and sloped walls is included in this definition. (see "Glazing area").

SOLAR HEAT GAIN COEFFICIENT (SHGC). The ratio of the solar heat gain entering the space through the fenestration assembly to the incident solar radiation. Solar heat gain includes directly transmitted solar heat and absorbed solar radiation which is then reradiated, conducted or convected into the space.

STANDARD REFERENCE DESIGN. A version of the proposed design that meets the minimum requirements of this code and is used to determine the maximum annual energy use requirement for compliance based on total building performance.

STOREFRONT. A non-residential system of doors and windows mullied as a composite fenestration structure that has been designed to resist heavy use and possible abuse and provide a high level of resistance to wind load and impact from wind borne debris. Storefront systems include, but are not limited to, exterior fenestration

systems that span from the floor level or above to the ceiling of the same story on commercial buildings.⁶

SUNROOM. A one-story structure attached to a dwelling with a glazing area in excess of 40 percent of the gross area of the structure's exterior walls and roof.

THERMAL ISOLATION. Physical and space conditioning separation from conditioned space(s). The conditioned space(s) shall be controlled as separate zones for heating and cooling or conditioned by separate equipment.

THERMOSTAT. An automatic control device used to maintain temperature at a fixed or adjustable set point.

U-FACTOR (THERMAL TRANSMITTANCE). The coefficient of heat transmission (air to air) through a building component or assembly, equal to the time rate of heat flow per unit area and unit temperature difference between the warm side and cold side air films (Btu/h . W . OF) [W/(m2. K)].

VAPOR RETARDER. A vapor resistant material, membrane or covering such as foil, plastic sheeting, or insulation facing having a permeance rating of 1 perm or less when tested in accordance with the desiccant method using Procedure A of ASTM E 96. Vapor retarders limit the amount of moisture vapor that passes through a material or wall assembly.

VENTILATION. The natural or mechanical process of supplying conditioned or unconditioned air to, or removing such air from, any space.

VENTILATION AIR. That portion of supply air that comes from outside (outdoors) plus any recirculated air that has been treated to maintain the desired quality of air within a designated space.

ZONE. A space or group of spaces within a building with heating or cooling requirements that are sufficiently similar so that desired conditions can be maintained throughout using a single controlling device.

WSEC Ref	Differences
202	
Description of Differences	
IECC has 58 terms listed, all definitions; WSEC has 137 terms listed:	
<ul style="list-style-type: none"> - 115 are definitions - 6 are acronyms (e.g. ASHRAE) - 10 are cross-references to WSEC definitions - 6 are references to definitions in other State codes 	
SubTAG Recommendation	
Consensus?	

WSEC Ref	Differences
202	Substantially the same
Description of Differences	
Automatic, dwelling unit, economizer air, economizer water, humidistat, infiltration, manual, readily accessible, service water heating, solar heat gain coefficient, thermostat, U-factor thermal transmittance (thermal transmittance U), ventilation, ventilation air	
SubTAG Recommendation	
Keep IECC language Decide AFTER review of other chapters	
Consensus?	
Revisit after/during review of other chapters	

WSEC Ref	Differences
202	Substantially different, but can be easily changed
Description of Differences	
IECC terms listed (WSEC terms in parentheses): Above grade wall, basement wall (below grade wall), building thermal envelope (building envelope), code official (building official), commercial building (nonresidential) and residential building, conditioned floor area (gross conditioned floor area), conditioned space, exterior wall (gross exterior wall area), curtain wall (glazed wall system) and storefront, entrance door (door), fenestration (glazing), heated slab (radiant slab floor), R-value thermal resistance (thermal resistance R), skylight (overhead glazing), vapor retarder, zone	
SubTAG Recommendation	
Decide AFTER review of other chapters	
Consensus?	
Revisit after/during review of other chapters	

⁶ EC63

WSEC Ref	Differences
202	IECC only
Description of Differences	
Accessible, alteration, approved, building, crawlspace wall, duct, duct system, energy analysis, energy cost, energy recovery ventilation system, energy simulation tool, factory-assembled glazed fenestration product, heat trap, insulating sheathing, labeled, listed, low-voltage lighting, proposed design, repair, roof assembly, screw lamp holders, site-built glazed product, standard reference design, sunroom, thermal isolation	
SubTAG Recommendation	
Keep IECC language Decide AFTER review of other chapters	
Consensus?	
Revisit after/during review of other chapters	

WSEC Ref	Differences
202	WSEC only
Description of Differences	
Advanced frame ceiling, advanced framed wall, AFUE, Air-conditioning comfort, ARI, ASHRAE, ASTM, boiler capacity, building exiting, building project, cooled space, COP, daylighted zone, daylight sensing control, deadband, design cooling conditions, design heating conditions, door area, EER, efficiency HVAC system, emissivity, energy, façade area, floor over unconditioned space, F-factor, garden window, glazing area, gross conditioned floor area, gross floor area, gross roof/ceiling area, guest room, heat, heat storage capacity, heated space fully heated, heated space semi-heated, HSPF, HVAC, HVAC system components, HVAC system equipment, IPLV, indirectly conditioned space, insulation baffle, IBC, IMC, luminaire, microcell, NFPA, NFRC, net heat output, net heat removal, new energy, nominal R-value, non-renewable energy sources, occupancy, occupancy sensor, opaque envelope areas, open blown, outdoor air, packaged terminal air conditioner, permeance, personal wireless service facility, pool cover, power, process energy, recooling, recovered energy, reheat, renewable energy sources, reset, SEER, sequence, service systems, shaded, shading coefficient, shall, single family, slab-on-grade exterior, slab-below-grade, small business, solar energy source, split system, standard framing, substantial contact, system, tapering, thermal by-pass, thermal conductance C, thermal transmittance overall Uo, total on-site energy input, transmission coefficient, transverse joint, unitary heating and cooling equipment, unitary heat pump, vaulted ceilings, vertical glazing, walls exterior, Washington State Building Code	
SubTAG Recommendation	
Decide AFTER review of other chapters	
Consensus?	

CHAPTER 3 CLIMATE ZONES

SECTION 301 CLIMATE ZONES

301.1 General. Climate zones from Figure 301.1 or Table 301.1 shall be used in determining the applicable requirements from Chapters 4 and 8. Locations not in Table 301.1 (outside the US) shall be assigned a climate zone based on Section 301.3.

WSEC Ref	Differences
302.3	Different but can be easily changed
Description of Differences	
Three zones instead of two Boundaries are different Coldest in IECC includes 4 counties; WSEC, 12 counties Climate zone determines which prescriptive path applies	
SubTAG Recommendation	
Accept IECC language	
Consensus?	

301.2 Warm humid counties. Warm humid counties are Listed in Table 301.2.

WSEC Ref	Differences
None	Does not apply to WA
Description of Differences	
No warm humid counties in WA	
SubTAG Recommendation	
Accept IECC language Delete Section via amendment	
Consensus?	

301.3 International climate zones. The climate zone for any location outside the United States shall be determined by applying Table 301.3(1) and then Table 301.3(2).

301.3.1 Warm humid criteria. "Warm humid" locations shall be defined as locations where either of the following conditions occurs:

1. 67°F (19.4 °C) or higher wet-bulb temperature for 3,000 or more hours during the warmest six consecutive months of the year;

2. 73°F (22.8°C) or higher wet-bulb temperature for 1,500 or more hours during the warmest six consecutive months of the year.

WSEC Ref	Differences
None	Does not apply to WA
Description of Differences	
No warm humid counties in WA	
SubTAG Recommendation	
Accept IECC language Delete Section via amendment	
Consensus?	

TABLE 301.1 CLIMATE ZONES BY STATE AND COUNTY	
Washington	
Zone 4 Marine	
except	
Zone 5 Dry	
Adams	
Asotin	
Benton	
Chelan	
Columbia	
Douglas	
Franklin	
Garfield	
Grant	
Kittitas	
Klickitat	
Lincoln	
Zone 6 Dry	
Ferry	
Okanogan	
Pend Oreille	
Stevens	

**SECTION 302
DESIGN CONDITIONS**

302.1 Interior design conditions. The interior design temperatures used for heating and cooling load calculations shall be a maximum of 72°F (22°C) for heating and minimum of ~~78°F (26°C)~~ 75°F (24°C) for cooling.⁷

WSEC Ref	Differences
302.2.1	Different but can be easily changed
Description of Differences	
Two temperatures are different: 72 vs 70 for heating and 75 vs 78 for heating	
SubTAG Recommendation	
Substitute WSEC language via amendment Keep IECC language	
Consensus?	

⁷ EC10

TABLE 301.3(1) INTERNATIONAL CLIMATE ZONE DEFINITIONS

MAJOR CLIMATE TYPE DEFINITIONS	
Marine (C) Definition – Locations meeting all four criteria: <ol style="list-style-type: none"> 1. Mean temperature of coldest month between –3°C (27°F and 18°C (65°F) 2. Warmest month mean < 22°C (72°F) 3. At least four months with mean temperatures over 10°C (50°F) 4. Dry season in summer. The month with the heaviest precipitation in the cold season has at least three times as much precipitation as the month with the least precipitation in the rest of the year. The cold season is October through March in the Northern Hemisphere and April through September in the Southern Hemisphere. 	
Dry (B) Definition - Locations meeting the following criteria: Not Marine and $P_{in} < 0.44 \times (TF - 19.5)$ [$P_{cm} < 2.0 \times (TC + 7)$ in SI units] where: P_{in} = Annual precipitation in inches (cm) T = Annual mean temperature in of (°C)	
Moist (A) Definition - Locations that are not Marine and not Dry. For SI: °C = [(°F)-32]/1.8; 1 inch = 2.54 cm	

TABLE 301.3(2) INTERNATIONAL CLIMATE ZONE DEFINITIONS

ZONE NUMBER	THERMAL CRITERIA	
	IP Units	SI Units
1	9000 < CDD50°F	5000 < CDD10°C
2	6300 < CDD50°F 5 9000	3500 < CDD10°C 5 5000
3A and 3B	4500 < CDD50°F 56300 AND HDD65°F 5 5400	2500 < CDD10°C 5 3500 AND HDD18°C 5 3000
4A and 4B	CDD50°F 5 4500 AND HDD65°F 5 5400	CDD10°C 5 2500 AND HDD18°C 5 3000
3C	HDD65°F 5 3600	HDD18°C 5 2000
4C	3600 < HDD65°F 5 5400	2000 < HDD18°C 5 3000
5	5400 < HDD65°F 5 7200	3000 < HDD18°C 5 4000
6	7200 < HDD65°F 5 9000	4000 < HDD18°C 5 5000
7	9000 < HDD65°F 5 12600	5000 < HDD18°C 5 7000
8	12600 < HDD65°F	7000 < HDD18 °C

For SI: °C = [(°F)-32]/1.8

CHAPTER 4 RESIDENTIAL ENERGY EFFICIENCY

(See Residential Appendix for Chapter 4)

CHAPTER 8 COMMERCIAL ENERGY EFFICIENCY

SECTION 801 GENERAL

WSEC Ref	Differences
1301 1330	WSEC Only
Description of Differences	
<p>1301 WSEC includes more detailed notes on scope. Including exceptions for greenhouses, semi conditioned spaces and un-staffed equipment shelters.</p> <p>WSEC scope includes defining climate zones.</p> <p>WSEC scope includes definitions for space heat types, electric resistance and other fuels.</p> <p>1330 Component Performance Trade off Method is unique to WSEC. IECC only has prescriptive and energy cost budgets methods.</p> <p>DOE has developed simplified envelope trade off method using software based on ENVSTD. This is a ASHRAE 90.1 – 1989 building load method. An amendment would be needed to make this an acceptable method of compliance.—101.5.1</p> <p>IECC only provides target R-values for opaque components. These would be used for both the prescriptive trade off methods and the total building performance methods. This is a less accurate method for noting specific requirements.</p> <p>The use of area weighted u-factors for opaque elements or glazing is not allowed in the IECC prescriptive methods.</p> <p>WSEC systems analysis approach is based on energy budgets. IECC energy budgets method is based on energy cost comparisons.</p>	
SubTAG Recommendation	
Consensus?	

801.1 Scope. The requirements contained in this chapter are applicable to commercial buildings, or portions of commercial buildings. These commercial buildings shall meet either the requirements of ASHRAE/IESNA Standard 90.1, Energy Standard for Buildings Except for Low-Rise Residential Buildings, or the requirements contained in this chapter.

WSEC Ref	Differences
1120; chapter 11	Different but can be easily changed
Description of Differences	
WSEC does not refer the user to an alternative energy code.	
SubTAG Recommendation	
Substitute WSEC language (method) via amendment	
Consensus?	
Substitute WSEC chapt 11; coordinate with chapt 1 Possibly incorporate portions of ASHRAE 90.1 in specific sections as appropriate	

802.1 (Supp) General. Walls, roof assemblies, floors, glazing and slabs on grade which are part of the building envelope for buildings where the window and glazed door area is not greater than 50 percent of the gross area of above-grade walls shall meet the requirements of Sections 802.2.1 through 802.2.9, as applicable. Buildings with more glazing shall meet the applicable provisions of ASHRAE/IESNA 90.1.⁸

WSEC Ref	Differences
1320; 1323.1 1333	Different but can be easily changed
Description of Differences	
<p>Both WSEC and IECC direct the user to a prescriptive table.</p> <p>WSEC allows glazing to wall area ratios greater than prescriptive target numbers if component performance or systems analysis methods are used.</p> <p>IECC refers the user to ASHARE 90.1 when the glazing to wall area ratios greater than target.</p>	
SubTAG Recommendation	
<ul style="list-style-type: none"> Substitute WSEC language (method) via amendment Keep IECC and accept the 90.1 reference Keep IECC but delete the 50% limitation and 90.1 reference and amend the table 	
Consensus?	
No consensus	

801.2 Application. The requirements in Sections 802 (Building envelope), 803 (Building mechanical systems), 804 (Service water heating) and 805 (Lighting) shall each be satisfied on an individual basis. Where one or more of these sections is not satisfied, compliance for that section(s) shall be demonstrated in accordance with the applicable provisions of ASHRAE/IESNA 90.1.

Exception: Buildings conforming to Section 806, provided Sections 802.4, 802.5, 803.2, 804, 805.2, 805.3, 805.4, 805.6 and 805.7 are each satisfied.

WSEC Ref	Differences
None + 1141.4	Different but can be easily changed
Description of Differences	
IECC Provides direction affirming compliance for each individual section.	
IECC Includes reference to 90.1 as an alternative path.	
The exception does what WSEC section 1141.4 does by referring the user to the systems analysis approach, with additional emphasis on mandatory requirements that can not be traded.	
SubTAG Recommendation	
<ul style="list-style-type: none"> Keep IECC language – except delete via amendment – reference to 90.1 Keep IECC but possibly incorporate portions of ASHRAE 90.1 in specific sections as appropriate 	
Consensus?	
Keep IECC but possibly incorporate portions of ASHRAE 90.1 as appropriate	

SECTION 802 BUILDING ENVELOPE REQUIREMENTS

802.1 General (Prescriptive)

802.1.1 Insulation and fenestration criteria. The building thermal envelope shall meet the requirements of Tables 802.2 and 802.3 based on the climate zone specified in Chapter 3. Buildings with a vertical fenestration area or skylight area that exceeds that allowed in Table 802.3 shall comply with the building envelope provisions of ASHRAE/IESNA 90.1.

WSEC Ref	Differences
1322 1323.1	<ul style="list-style-type: none"> Substantially the same Different but can be easily changed
Description of Differences	
IECC refers the user to the appropriate insulation and fenestration tables much like WSEC 1322	
IECC refers the user to 90.1 as an alternative when glazing areas exceed 50%. WSEC 1323.1 notes the limit only for the prescriptive approach.	
SubTAG Recommendation	
<ul style="list-style-type: none"> Keep IECC language – except substitute WSEC language via amendment to delete reference to 90.1 Keep IECC language and possibly incorporate portions of ASHRAE 90.1 in specific sections as appropriate 	
Consensus?	
Keep IECC language and possibly incorporate portions of ASHRAE 90.1 in specific sections as appropriate	

802.2 Specific insulation requirements (Prescriptive). Opaque assemblies shall comply with Table 802.2.

WSEC Ref	Differences
1322	Substantially the same
Description of Differences	
Refers the user to the appropriate prescriptive table.	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

802.2.1 802.2.4 Roof assembly. The minimum thermal resistance (*R*-value) of the insulating material installed either between the roof framing or continuously on the roof assembly shall be as specified in Table 802.2, based on construction materials used in the roof assembly.

Exception: Continuously insulated roof assemblies where the thickness of insulation varies 1 inch (25.4 mm) or less and where the area weighted *U*-factor is equivalent to the same assembly with the *R*-value specified in Table 802.2.

Insulation installed on a suspended ceiling with removable ceiling tiles shall not be considered part of the minimum thermal resistance of the roof insulation.
9

WSEC Ref	Differences
1313.2, 1322, 1330	Substantially the same
Description of Differences	
Both refer the user to a table for R-values. WSEC describes roof ventilation. This is included in the IBC. IECC provides a limited area weighted U-factor calculation. WSEC has component performance building envelope option—IECC refers you to ASHRAE for this method.	
SubTAG Recommendation	
<ul style="list-style-type: none"> Keep IECC language Amend with WSEC to provide component performance path Amend IECC with ASHRAE language 	
Consensus?	
No consensus—WSEC or ASHRAE; IECC not flexible enough	

802.2.2 802.1.1 Classification of walls. Walls associated with the building envelope shall be classified in accordance with Section 802.2.2.1 or 802.2.2.2.

802.2.2.1 Above-grade walls. Above-grade walls are those walls covered by Section 802.2.3 on the exterior of the building and completely above grade or walls that are more than 15 percent above grade.

WSEC Ref	Differences
201 Walls, Exterior	Different but can be easily changed
Description of Differences	
WSEC defines above grade walls as a wall with a slope > 60 degrees. This includes band joist between floors.	
SubTAG Recommendation	
Keep WSEC language	
Consensus?	
Substitute WSEC language via amendment	

802.2.2.2 Below-grade walls. Below-grade walls covered by Section 802.2.4 are basement or first-story walls associated with the exterior of the building that are at least 85 percent below grade.

WSEC Ref	Differences
201 Below grade wall	Different but can be easily changed
Description of Differences	
WSEC defines below grade as entirely below the finished grade or which extend two feet or less above grade. IECC allows 15% of the wall to be above grade. The IECC allows greater above grade wall area to be defined as below grade when the wall is 13.4 feet or greater in height. This is only a problem if there is a big difference in the R values of above and below grade walls.	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language if the insulation levels are amended	

802.2.3 802.2.1 Above-grade walls. The minimum thermal resistance (*R*-value) of the insulating material(s) installed in the wall cavity between the framing members and continuously on the walls shall be as specified in Table 802.2, based on framing type and construction materials used in the wall assembly. The *R*-value of integral insulation installed in concrete masonry units (CMU) shall not be used in determining compliance with Table 802.2. “Mass walls” shall include walls weighing at least (1) 35 pounds per square foot (170 kg/m²) of wall surface area or (2) 25 pounds per square foot (120 kg/m²) of wall surface area if the material weight is not more than 120 pounds per cubic foot (1,900 kg/m³).

WSEC Ref	Differences
1311.2, 1322 Table 13 Mass footnote 2	Substantially the same Different but can be easily changed

⁹ EC70 AS

Description of Differences	
General wall description for prescriptive wall compliance is similar. IECC mass wall requirement results in an approximate heat capacity (Btu/ft ²) requirement of (1)7 or (2)5. WSEC requires 9. WSEC requires heavier wall assemblies to be defined as a mass wall. ComCheck is very liberal when calculating the benefits of mass relative to insulation location. WSEC 13-1 footnote 2b allows a prescriptive CMU wall that would not meet primary insulation requirements of either the WSEC or IECC.	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

802.2.4 802.2.8 Below-grade walls. The minimum thermal resistance (*R*-value) of the insulating material installed in, or continuously on, the below-grade walls shall be as specified in Table 802.2, and shall extend to a depth of 10 feet (3048 mm) below the outside finish ground level, or to the level of the floor, whichever is less.

WSEC Ref	Differences
1311.2, 1322	ifferent but can be easily changed
Description of Differences	
WSEC requires all area of the below grade wall to be insulated. IECC allows walls area more than 10 feet below grade to remain uninsulated. Note: There are only below grade insulation requirements in IECC zone 6 and above.	
SubTAG Recommendation	
Substitute WSEC language via amendment	
Consensus?	
Substitute WSEC language via amendment	

802.2.5 802.2.6 Floors over outdoor air or unconditioned space. The minimum thermal resistance (*R*-value) of the insulating material installed either between the floor framing or continuously on the floor assembly shall be as specified in Table 802.2, based on construction materials used in the floor assembly.

“Mass floors” shall include floors weighing at least (1) 35 pounds per square foot (170 kg/m²) of floor surface area or (2) 25 pounds per square foot (120

kg/m²) of floor surface area if the material weight is not more than 12 pounds per cubic foot (1,900 kg/m³).

WSEC Ref	Differences
1311.4, 1322	Different but can be easily changed
Description of Differences	
WSEC has specific requirements for insulation contact with floor above, and supports. IECC only references the requirements for <i>R</i> -value. Mass floors not defined separately in WSEC.	
SubTAG Recommendation	
Substitute WSEC language via amendment	
Consensus?	
Substitute WSEC language	

802.2.6 802.2.7 Slabs on grade. The minimum thermal resistance (*R*-value) of the insulation around the perimeter of unheated or heated slab-on-grade floors shall be as specified in Table 802.2. The insulation shall be placed on the outside of the foundation or on the inside of a foundation wall. The insulation shall extend downward from the top of the slab for a minimum distance as shown in the table or to the top of the footing, whichever is less, or downward to at least the bottom of the slab and then horizontally to the interior or exterior for the total distance shown in the table.

WSEC Ref	Differences
1322, 1311.5, 1311.6	Substantially the same Different but can be easily changed
Description of Differences	
Instructions for insulation placement are nearly identical. WSEC requires heated slabs to be fully insulated. IECC specifies perimeter insulation values.	
SubTAG Recommendation	
Keep WSEC language	
Consensus?	
Substitute WSEC language via amendment	

802.2.7 802.2.2 Opaque doors. Opaque doors (doors having less than 50 percent glass area) shall meet the applicable requirements for doors as specified in Table 802.2 and be considered as part of the gross area of above-grade walls that are part of the building envelope.

WSEC Ref	Differences
1322 1312.1	Substantially the same
Description of Differences	
WSEC does not define “opaque doors” differently than glazed doors. WSEC Chapter 10 provides default U-factors for doors. This has been important, because many doors are not tested.	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

**TABLE 802.2 ~~802.2(1)~~
BUILDING ENVELOPE
REQUIREMENTS: OPAQUE ASSEMBLIES**
(No changes to existing text, see 2004 supplement)

802.3 Fenestration (Prescriptive). Fenestration shall comply with Table 802.3

802.3.1 Maximum area. The vertical fenestration area (not including opaque doors) shall not exceed the percentage of the gross wall area specified in Table 802.3. The skylight area shall not exceed the percentage of the gross roof area specified in Table 802.3.

802.3.2 ~~802.2.3~~ Maximum U-factor and SHGC. For vertical fenestration, the maximum U-factor and solar heat gain coefficient (SHGC) shall be as specified in Table 802.3, based on the window projection factor. For skylights, the maximum U-factor and solar heat gain coefficient (SHGC) shall be as specified in Table 802.3

The window projection factor shall be determined in accordance with Equation 8-1.

(Equation 8-1)

$$PF = A/B$$

where:

PF=Projection factor (decimal).

A=Distance measured horizontally from the furthest continuous extremity of any overhang, eave, or permanently attached shading device to the vertical surface of the glazing.

B=Distance measured vertically from the bottom of the glazing to the underside of the overhang, eave, or permanently attached shading device.

Where different windows or glass doors have different *PF* values, they shall each be evaluated

separately, or an area-weighted *PF* value shall be calculated and used for all windows and glass doors.

WSEC Ref	Differences
1323 1323 exception 1323.2	Substantially the same <ul style="list-style-type: none"> ▪ WSEC only ▪ WSEC only ▪ IECC only
Description of Differences	
Both codes reference glazing area limits, U-factors and SHGC through tables.	
WSEC provides a glazing exception for store front glazing. WSEC also provides exceptions for a limited amount of single glazing.	
WSEC allows area weighted u-factors. IECC does not.	
WSEC does not provide a higher SHGC when building projections are used to shade the building.	
SubTAG Recommendation	
<ul style="list-style-type: none"> ▪ Keep IECC language -- ref to a table (802.3) ▪ Amend IECC – add WSEC store front window exception 1323 ex ▪ Amend IECC – add area weighted u-factors ▪ Amend IECC language – strike SHGC tradeoff / eq 8-1 	
Consensus?	
Amend IECC as noted above	

**TABLE 802.3 ~~802.2(2)~~
BUILDING ENVELOPE REQUIREMENTS:
FENESTRATION**

EC63 revisions to table 802.2(2) follow

WSEC Ref	Differences
Description of Differences	
See graph, attached	
SubTAG Recommendation	
Consensus?	
Keep IECC language except reference to ASHRAE	

802.4 ~~802.3~~ Air leakage (Mandatory).

802.4.1 ~~802.3.1~~ Window and door assemblies.

The air leakage of window and sliding or swinging door assemblies that are part of the building envelope shall be determined in accordance with

AAMA/WDMA 101/I.S.2 or AAMA/WDMA

~~101/I.S.2/NAFS-02, AAMA/WDMA/CSA 101/I.S.2/A440~~ or NFRC 400 by an accredited, independent laboratory, and labeled and certified by the manufacturer and shall not exceed the values in Section 402.4.2.

Exception: Site-constructed windows and doors that are weatherstripped or sealed in accordance with Section 802.4.3.¹⁰

802.4.2 802.3.2 Curtain wall, storefront glazing and commercial entrance doors. Curtain wall, storefront glazing and commercial-glazed swinging entrance doors and revolving doors shall be tested for air leakage at 1.57 pounds per square foot (psf) (75 Pa) in accordance with ASTM E 283. For curtain walls and storefront glazing, the maximum air leakage rate shall be 0.3 cubic feet per minute per square foot (cfm/ft²) (5.5 m³/h × m²) of fenestration area. For commercial glazed swinging entrance doors and revolving doors, the maximum air leakage rate shall be 1.00 cfm/ft² (18.3 m³/h × m²) of door area when tested in accordance with ASTM E 283.

WSEC Ref	Differences
1314.1 1314.2	Different but can be easily changed
Description of Differences	
IECC language is more specific. Requires testing.	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language and review site constructed window requirements	

802.4.3 802.3.3 Sealing of the building envelope. Openings and penetrations in the building envelope shall be sealed with caulking materials or closed with gasketing systems compatible with the construction materials and location. Joints and seams shall be sealed in the same manner or taped or covered with a moisture vapor-permeable wrapping material. Sealing materials spanning joints between construction materials shall allow for expansion and contraction of the construction materials.

802.4.4 802.3.4 Outdoor air intakes and exhaust openings. Stair and elevator shaft vents and other outdoor air intakes and exhaust openings integral to the building envelope shall be equipped with not less than a Class I motorized, leakage-rated damper with a maximum leakage rate of 4 cfm/ft² (6.8 L/s • m²) at

1.0 inch water gauge (w.g.) (1250 Pa) when tested in accordance with AMCA 500D.

Exception: Gravity (nonmotorized) dampers are permitted to be used in buildings less than three stories in height above grade.

802.4.5 802.3.5 Loading dock weather seals.

Cargo doors and loading dock doors shall be equipped with weather seals to restrict infiltration when vehicles are parked in the doorway.

802.4.6 802.3.6 Vestibules. A door that separates conditioned space from the exterior shall be protected with an enclosed vestibule, with all doors opening into and out of the vestibule equipped with self-closing devices. Vestibules shall be designed so that in passing through the vestibule it is not necessary for the interior and exterior doors to open at the same time.

Exceptions:

1. Buildings in Climate Zones 1 and 2 as indicated in Figure 301.1 and Table 301.1.
2. Doors not intended to be used as a building entrance door, such as doors to mechanical or electrical equipment rooms.
3. Doors opening directly from a guestroom or dwelling unit.
4. Doors that open directly from a space less than 3,000 square feet (298 m²) in area.
5. Revolving doors.
6. Doors used primarily to facilitate vehicular movement or material handling and adjacent personnel doors.

802.4.7 802.3.7 Recessed luminaires. When installed in the building envelope, recessed luminaires shall meet one of the following requirements:

1.Type IC rated, manufactured with no penetrations between the inside of the recessed fixture and ceiling cavity and sealed or gasketed to prevent air leakage into the unconditioned space.

2.Type IC or non-IC rated, installed inside a sealed box constructed from a minimum 0.5-inch-thick (12.7 mm) gypsum wallboard or constructed from a preformed polymeric vapor barrier, or other air-tight assembly manufactured for this purpose, while maintaining required clearances of not less than 0.5 inch (12.7 mm) from combustible material and not less than 3 inches (76 mm) from insulation material.

¹⁰ EC32 AM

3.Type IC rated, in accordance with ASTM E 283 admitting no more than 2.0 cubic feet per minute (cfm) (0.944 L/s) of air movement from the conditioned space to the ceiling cavity. The luminaire shall be tested at 1.57 psf (75 Pa) pressure difference and shall be labeled.

WSEC Ref	Differences
1314.1	<ul style="list-style-type: none"> Substantially the same IECC only
Description of Differences	
IECC section 802.4.3 is substantially the same as WSEC 1314.1.	
IECC subsections that follow provide specific requirements not covered by WSEC.	
WSEC does not require loading dock seals	
IECC requires vestibules for areas over 3000 sf	
SubTAG Recommendation	
Keep IECC language for all subsections (802.4.3 thru 802.4.7)	
Consensus?	
Keep IECC language—Review vestibule requirement	

802.5 ~~802.4.2~~ Moisture control (Mandatory). All framed walls, floors and ceilings not ventilated to allow moisture to escape shall be provided with an approved vapor retarder having a permeance rating of 1 perm (5.7×10^{-11} kg/Pa · s · m²) or less, when tested in accordance with the dessicant method using Procedure A of ASTM E 96. The vapor retarder shall be installed on the warm-in-winter side of the insulation.

Exceptions:

- 1.Buildings located in Climate Zones 1 through **7 3** as indicated in Figure 301.1 and Table 301.1.¹¹
- 2.In construction where moisture or its freezing will not damage the materials.
- 3.Where other approved means to avoid condensation in unventilated framed wall, floor, roof and ceiling cavities are provided.

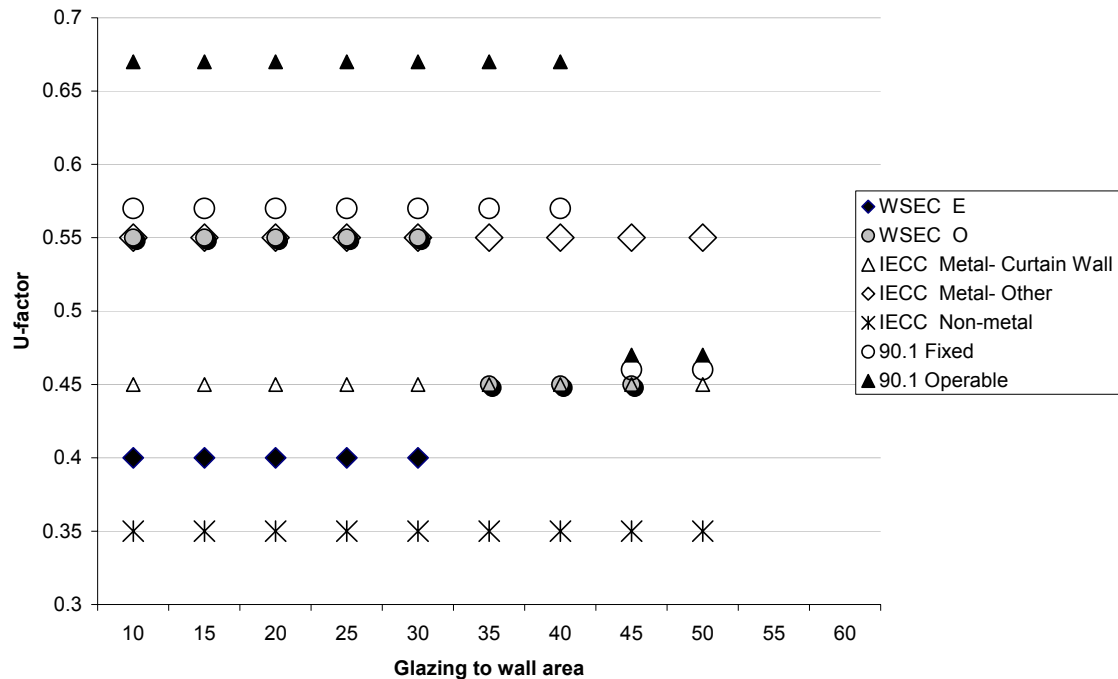
WSEC Ref	Differences
1313.1	Substantially the same
Description of Differences	
WSEC references assemblies with more detail.	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

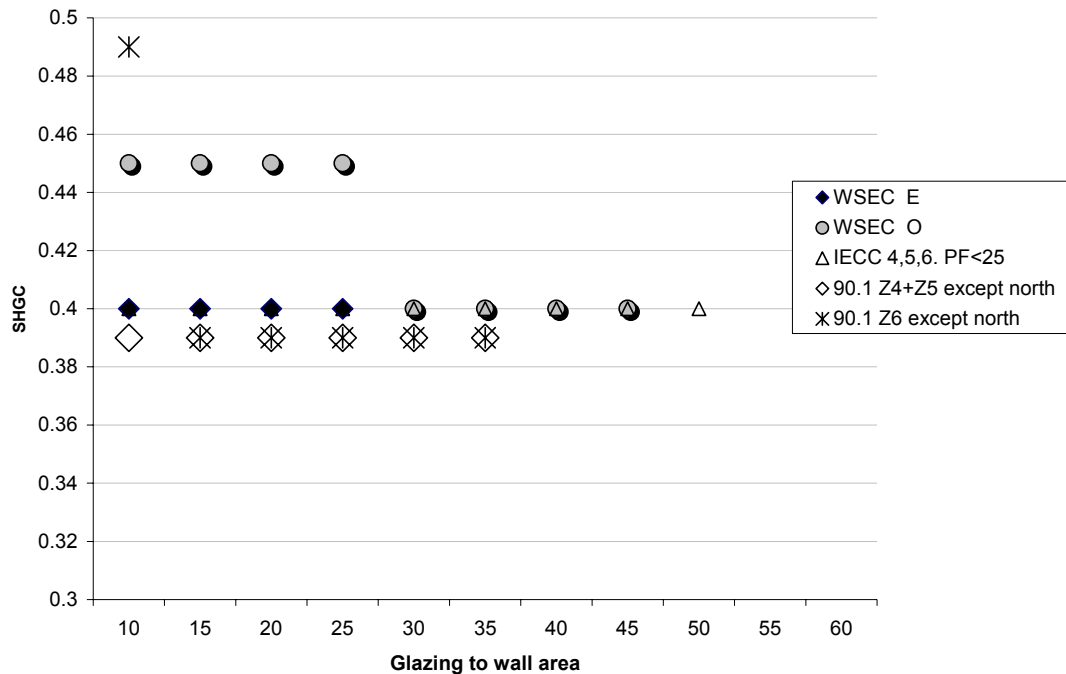
¹¹ EC58

Assembly Type	WSEC Electric Resistance Climate Zone 1	WSEC Other Fuels Climate Zone 1	IECC Climate Zone 5 (marine 4)	ASHRAE 90.1 2004 Climate Zone 4	ASHRAE 90.1- 2004 Climate Zone 5
Roof					
Deck insulation	R-30(ci)	R-21(ci)	R-20 (ci)	R-15(ci)	R-15(ci)
Metal building	R-30	R-21	R-19*	R-19	R-19
Attic	R-38	R-30	R-30	R-30	R-38
Above grade walls					
Mass	---	R-5.7(ci)	R-7.6(ci)	R-5.7(ci)	R-11.4(ci)
Metal Building	---	---	R13 + R-13	R13 + R-13	R13+ R13
Steel Framing	---	R-19	R-13+R- 3.8(ci)	R-13	R-13+R- 7.5(ci)
Wood Framing	R-19	R-19	R-13	R-13	R-13
Below grade walls					
Framed, interior	R-19	R-19			-
Continuous, exterior	R-10	R-10			
Floors					
Mass	R-30	R-19	R-10(ci)	R-6.3(ci)	R-10.4(ci)
Steel joist	R-30	R-19	R-19	R-19	R-30
Wood framing	R-30	R-19	R-19	R-19	R-30
Slab-on-grade					
Unheated	R-10 perimeter**	R-10 perimeter**	NR	NR	NR
Heated	R-10 entire area	R-10 entire area	R-7.5 perimeter**	R-7.5 perimeter**	R-10 Perim to 36"
Opaque Doors					
Swinging	U-.60	U-.60	U-.70	U-.70	U-.70
Non-swinging	U-.60	U-.60	U-1.45	U-1.45	U-1.45

Assembly Type	WSEC Electric Resistance Climate Zone 2	WSEC Other Fuels Climate Zone 2	IECC Climate Zone 5 (marine 4)	IECC Climate Zone 6	ASHRAE 90.1- 2004 Climate Zone 5	ASHRAE 90.1- 2004 Climate Zone 6
<u>Roof</u>						
Deck insulation	R-30(ci)	R-25(ci)	R-20 (ci)	R-20 (ci)	R-15(ci)	R-15(ci)
Metal building	R-30	R-25	R-19*	R-19*	R-19	R-19
Attic	R-38	R-38	R-30	R-30	R-38	R-38
<u>Above grade walls</u>						
Mass	-	R-7.6(ci)	R-7.6(ci)	R-9.5(ci)	R-11.4(ci)	R-11.4(ci)
Metal Building	-	-	R13+ R13	R13+ R13	R13+ R13	R13+ R13
Steel Framing	-	R-13+R- 3.8(ci)	R-13+R- 3.8(ci)	R-13+R- 3.8(ci)	R-13+R- 7.5(ci)	R-13+R- 7.5(ci)
Wood Framing	R-24	R-19	R-13	R-13	R-13	R-13+R- 3.8(ci)
<u>Below grade walls</u>						
Framed, interior	R-24	R-19			-	-
Continuous, exterior	R-12	R-12				7.5 (ci)
<u>Floors</u>						
Mass	R-30	R-21	R-10(ci)	R-10(ci)	R-10.4(ci)	R-6.3(ci)
Steel joist	R-30	R-21	R-19	R-19	R-30	R-19
Wood framing	R-30	R-21	R-19	R-30	R-30	R-19
<u>Slab-on-grade</u>						
Unheated	R-10 perimeter**	R-10 perimeter**	NR	NR	NR	NR
Heated	R-10 entire area	R-10 entire area	R-7.5 Perim to 24"	R-10 Perim to 24	R-10 Perim to 36"	R-10 Perim to 48"
<u>Opaque Doors</u>						
Swinging	U-.60	U-.60	U-.70	U-.70	U-.70	U-.70
Non-swinging	U-.60	U-.60	U-1.45	U-0.50	U-1.45	U-1.45

WSEC Ref	Differences
T 13-1, 13-2	
Description of Differences	
<ul style="list-style-type: none"> • IECC has metal building table that is more comprehensive than WSEC • IECC does not address below grade walls • IECC lacks U-factors • IECC more stringent for walls other than wood walls • Floor slab above grade unclear in IECC 	
SubTAG Recommendation	
Needs further study, UA comparisons	
Consensus?	
Needs further study	





SECTION 803 BUILDING MECHANICAL SYSTEMS

803.1 General. Mechanical systems and equipment serving the building heating, cooling or ventilating needs shall comply with Section 803.2 (referred to as the mandatory provisions) and either:

1. Section 803.3 (Simple systems), or
2. Section 803.4 (Complex systems).

WSEC Ref	Differences
1401, 1410	Different but can be easily changed
Description of Differences	
WSEC more descriptive and table is helpful, easier to use	
SubTAG Recommendation	
<ul style="list-style-type: none"> WSEC is better Keep IECC language 	
Consensus?	
Keep IECC language	

803.2 Provisions applicable to all Mechanical systems (Mandatory).

803.2.1 Calculation of heating and cooling loads. Design loads shall be determined in accordance with the procedures described in the ASHRAE Fundamentals Handbook. Heating and cooling loads shall be adjusted to account for load reductions that are achieved when energy recovery systems are utilized in the HVAC system in accordance with the ASHRAE HVAC Systems and Equipment Handbook. Alternatively, design loads shall be determined by an approved equivalent computation procedure, using the design parameters specified in Chapter 3.

WSEC Ref	Differences
None	Different but can be easily changed
Description of Differences	
<ul style="list-style-type: none"> WSEC has no load calculation guidance. IMC w/ state amendments sends user to the IECC. Not much teeth in this section 	

SubTAG Recommendation
<ul style="list-style-type: none"> Stay with IECC. Amendment needed for energy recovery systems.
Consensus?
No consensus

803.2.2 803.2.1.4 Equipment and system sizing. Heating and cooling equipment and systems capacity shall not exceed the loads calculated in accordance with Section 803.2.1. A single piece of equipment providing both heating and cooling must satisfy this provision for one function with the capacity for the other function as small as possible, within available equipment options.

Exceptions:

1. Required standby equipment and systems provided with controls and devices that allow such systems or equipment to operate automatically only when the primary equipment is not operating.
2. Multiple units of the same equipment type with combined capacities exceeding the design load and provided with controls that have the capability to sequence the operation of each unit based on load.

WSEC Ref	Differences
None	Different but can be easily changed
Description of Differences	
<ul style="list-style-type: none"> WSEC has no load calculation guidance. IECC is more stringent 	
SubTAG Recommendation	
<ul style="list-style-type: none"> This code limits equipment sizing to the calculated load. This interferes with good engineering practice in many applications. See Seattle for alternate approach (allows 125% sizing). Amend IECC language 	
Consensus?	
Amend IECC language	

803.2.3 803.3.2 HVAC equipment performance requirements. Equipment shall meet the minimum efficiency requirements of Tables 803.2.3(1), 803.2.3(2), 803.2.3(3), 803.2.3(4), 803.2.3(5), 803.2.3(6), 803.2.3(7), 803.2.3(8), 803.2.3(9), 803.2.3(10) and 803.2.3(11) when tested and rated in accordance with the applicable test procedure. The efficiency shall be verified through certification under an approved certification program or, if no certification program

exists, the equipment efficiency ratings shall be supported by data furnished by the manufacturer. Where multiple rating conditions or performance requirements are provided, the equipment shall satisfy all stated requirements. Where components, such as indoor or outdoor coils, from different manufacturers are used, calculations and supporting data shall be furnished by the designer that demonstrate that the combined efficiency of the specified components meets the requirements herein.

Exception: Equipment listed in Table 803.3.2(7) not designed for operation at ARI Standard test conditions of 44°F (7°C) leaving chilled water temperature and 85°F (29°C) entering condenser water temperature shall have a minimum full load COP and IPLV rating as shown in Tables 803.3.2(8) through 803.3.2(10) as applicable. The table values are only applicable over the following full load design ranges:

Leaving Chilled Water Temperature:
40 to 48°F (4 to 9°C)

Entering Condenser Water Temperature:
75 to 85°F (24 to 29°C)

Condensing Water Temperature Rise:
5 to 15°F (3 to 8°C)

Chillers designed to operate outside of these ranges are not covered by this code.

WSEC Ref	Differences
1411	Different but can be easily changed
Description of Differences	
<ul style="list-style-type: none"> WSEC does not have the exception for rating chillers at non standard conditions. IECC does not have the furnace ignition, vent damper, etc. requirements. <p>Tables</p> <ul style="list-style-type: none"> Recommend ASHRAE IPLV tables in lieu of IECC tables WSEC is more stringent than IECC in almost every case WSEC does not have tables for nonstandard centrifugal chillers; IECC tables should be amended to meet ASHRAE requirements 	
SubTAG Recommendation	
<ul style="list-style-type: none"> Accept IECC Add furnace requirements from WSEC. Amend IECC tables for nonstandard chillers 	
Consensus?	
Amend IECC language/tables	

WSEC Ref	Differences												
1411.3	Does not exist in IECC												
Description of Differences													
1411.3 Combination Space and Service Water Heating: For combination space and service water heaters with a principal function of providing space heat, the Combined Annual Efficiency (CAE) may be calculated by using ASHRAE Standard 124-1991. Storage water heaters used in combination space heat and water heat applications shall have either an Energy Factor (EF) or a Combined Annual Efficiency (CAE) of not less than the following:													
	<table><tr><th></th><th>Energy Factor (EF)</th><th>Combined Annual Efficiency (CAE)</th></tr><tr><td>< 50 gallon storage</td><td>0.58</td><td>0.71</td></tr><tr><td>50 to 70 gallon storage</td><td>0.57</td><td>0.71</td></tr><tr><td>> 70 gallon storage</td><td>0.55</td><td>0.70</td></tr></table>		Energy Factor (EF)	Combined Annual Efficiency (CAE)	< 50 gallon storage	0.58	0.71	50 to 70 gallon storage	0.57	0.71	> 70 gallon storage	0.55	0.70
	Energy Factor (EF)	Combined Annual Efficiency (CAE)											
< 50 gallon storage	0.58	0.71											
50 to 70 gallon storage	0.57	0.71											
> 70 gallon storage	0.55	0.70											
SubTAG Recommendation													
<ul style="list-style-type: none">Retain WSEC 1411.3Existing Table needs updating to be consist with fed standards													
Consensus?													
Amend IECC language													

WSEC Ref	Differences
1411.4	Does not exist in IECC
Description of Differences	
1411.4 Packaged Electric Heating and Cooling Equipment: Packaged electric equipment providing both heating and cooling with a total cooling capacity greater than 20,000 Btu/h shall be a heat pump.	
EXCEPTION: Unstaffed equipment shelters or cabinets used solely for personal wireless service facilities.	
SubTAG Recommendation	
Retain WSEC 1411.4	
Consensus?	
Amend IECC language	

803.2.4 803.3.3 HVAC system controls. Each heating and cooling system shall be provided with thermostatic controls as required in Sections 803.2.4.1 through 803.2.4.4.

803.2.4.1 803.3.3.4 Thermostatic controls. The supply of heating and cooling energy to each zone shall be controlled by individual thermostatic controls capable of responding to temperature within the zone. Where humidification or dehumidification or both is provided, at least one humidity control device shall be provided for each humidity control system

Exception: Independent perimeter systems that are designed to offset only building envelope heat losses or gains or both serving one or more perimeter zones also served by an interior system provided:

1.The perimeter system includes at least one thermostatic control zone for each building exposure having exterior walls facing only one orientation (within +/- 45 degrees) (0.8 rad) for more than 50 contiguous feet (15.2 m); and,

2. The perimeter system heating and cooling supply is controlled by a thermostat(s) located within the zone(s) served by the system.

WSEC Ref	Differences
1412.1, 1412.3	Different but can be easily changed
Description of Differences	
<ul style="list-style-type: none"> WSEC requires a zone per floor. Confusing exception in IECC 	
SubTAG Recommendation	
<ul style="list-style-type: none"> IECC needs work. We can't agree on what the exception even means. WSEC requirement for each floor to be a zone should be retained. Retain IECC language. 	
Consensus?	
Amend IECC language with WSEC language	

803.2.4.1.1 803.3.3.1.1 Heat pump supplementary heat. Heat pumps having supplementary electric resistance heat shall have controls that, except during defrost, prevent supplementary heat operation when the heat pump can meet the heating load.

WSEC Ref	Differences
1412.5	Different but can be easily changed
Description of Differences	
WSEC more stringent--compression heating and anticipation of needs	
SubTAG Recommendation	
Retain WSEC	
Consensus?	
Amend IECC language	

803.2.4.2 803.3.3.2 Set point overlap restriction. Where used to control both heating and cooling, zone thermostatic controls shall provide a temperature range or deadband of at least 5°F (2.8°C) within which the supply of heating and cooling energy to the zone is capable of being shut off or reduced to a minimum.

Exception: Thermostats requiring manual changeover between heating and cooling modes.

WSEC Ref	Differences
1412.2	Different but can be easily changed
Description of Differences	
WSEC exceptions one and two.	
SubTAG Recommendation	
<ul style="list-style-type: none"> Substitute WSEC language via amendment. Amend IECC language with except 1 of WSEC Retain IECC language 	
Consensus?	
Amend IECC language	

803.2.4.3 803.3.3.3 Off-hour controls. Each zone shall be provided with thermostatic setback controls that are controlled by either an automatic time clock or programmable control system.

Exceptions:

1. Zones that will be operated continuously.
2. Zones with a full HVAC load demand not exceeding 6,800 Btu/h (2 kW) and having a readily accessible manual shutoff switch.

803.2.4.3.1 803.3.3.3.1 Thermostatic setback capabilities. Thermostatic setback controls shall have the capability to set back or temporarily operate the system to maintain zone temperatures down to 55°F (13°C) or up to 85°F (29°C).

803.2.4.3.2 803.3.3.3.2 Automatic setback and shutdown capabilities. Automatic time clock or programmable controls shall be capable of starting and stopping the system for seven different daily schedules per week and retaining their programming and time setting during a loss of power for at least 10 hours. Additionally, the controls shall have: a manual override that allows temporary operation of the system for up to 2 hours; a manually operated timer capable of being adjusted to operate the system for up to 2 hours; or an occupancy sensor.

WSEC Ref	Differences
1412.4	Different but can be easily changed
Description of Differences	
A bit more required in IECC	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

803.2.4.4 803.3.3.4 Shutoff damper controls. Both outdoor air supply and exhaust ducts shall be equipped with ~~gravity or~~ motorized dampers that will automatically shut when the systems or spaces served are not in use.

Exception: ~~Individual supply systems with a design airflow rate of 3,000 cfm (1416 L/s) or less.~~

1. Gravity dampers shall be permitted in buildings less than three stories in height
2. Gravity dampers shall be permitted for buildings of any height located in climate zones 1, 2,
3. Gravity dampers shall be permitted for outside air intake or exhaust airflows of 300 cfm or less.

¹²

WSEC Ref	Differences
1412.4.1	Different but can be easily changed
Description of Differences	
<ul style="list-style-type: none"> WSEC has exception for grease duct. WSEC has exception for exhaust openings in first story and below. WSEC has a damper leakage standard referenced. 	
SubTAG Recommendation	
<ul style="list-style-type: none"> Substitute WSEC language via amendment. Amend IECC language 	
Consensus?	
Amend IECC language	

WSEC Ref	Differences
1412.4.2	WSEC only
Description of Differences	
1412.4.2 Optimum Start Controls: Heating and cooling systems with design supply air capacities exceeding 10,000 cfm shall have optimum start controls. Optimum start controls shall be designed to automatically adjust the start time of an HVAC system each day to bring the space to desired occupied temperature levels immediately before scheduled occupancy. The control algorithm shall, as a minimum, be a function of the difference between space temperature and occupied setpoint and the amount of time prior to scheduled occupancy.	
SubTAG Recommendation	
Substitute WSEC language via amendment.	
Consensus?	
Include WSEC language via amendment	

WSEC Ref	Differences
1412.6	WSEC only
Description of Differences	
1412.6 Combustion Heating Equipment Controls: Combustion heating equipment with a capacity over 225,000 Btu/h shall have modulating or staged combustion control. EXCEPTIONS: 1. Boilers. 2. Radiant heaters	
SubTAG Recommendation	
Substitute WSEC language via amendment..	
Consensus?	
Include WSEC language via amendment	

803.2.5 Ventilation. Ventilation, either natural or mechanical, shall be provided in accordance with Chapter 4 of the *International Mechanical Code*. Where mechanical ventilation is provided, the system shall provide the capability to reduce the outdoor air supply to the minimum required by Chapter 4 of the *International Mechanical Code*.

WSEC Ref	Differences
1402	Different but can be easily changed
Description of Differences	
<ul style="list-style-type: none"> WSEC references the WSVIAQ code IECC references the IMC IECC has a (controls?) requirement to reduce outside air to minimum. 	
SubTAG Recommendation	
<ul style="list-style-type: none"> Keep IECC language (maybe clarify the controls? Requirement). Amend to include reference to VIAQ 	
Consensus?	
Amend IECC language	

803.2.6 ~~803.3.10~~ Energy recovery ventilation systems. Individual fan systems that have both a design supply air capacity of 5,000 cfm (2.36 m³/s) or greater and a minimum outside air supply of 70 percent or greater of the design supply air quantity shall have an energy recovery system that provides a change in the enthalpy of the outdoor air supply of 50 percent or more of the difference between the outdoor air and return air at design conditions. Provision shall be made to bypass or control the energy recovery system to permit cooling with outdoor air where cooling with outdoor air is required.

Exception: An energy recovery ventilation system shall not be required in any of the following conditions:

1. Where energy recovery systems are prohibited by the *International Mechanical Code*.

2. Laboratory fume hood systems with a total exhaust rate of 15,000 cfm (7.08 m³/s) or less.
3. Laboratory fume hood systems with a total exhaust rate greater than 15,000 cfm (7.08 m³/s) that include at least one of the following features:

3.1. Variable-air-volume hood exhaust and room supply systems capable of reducing exhaust and makeup air volume to 50 percent or less of design values.

3.2 Direct makeup (auxiliary) air supply equal to at least 75 percent of the exhaust rate, heated no warmer than 2°F (Δ1.1°C) below room set point, cooled to no cooler than 3 °F (Δ1.7°C) above room set point, no humidification added, and no simultaneous heating and cooling used for dehumidification control.

4. Systems serving spaces that are not cooled and are heated to less than 60°F (15.5°C).

5. Where more than 60 percent of the outdoor heating energy is provided from site-recovered or site solar energy.

6. Heating systems in climates with less than 3600 HDD.

7. Cooling systems in climates with a 1 percent cooling design wet-bulb temperature less than 64 °F (17.7°C).

8. Systems requiring dehumidification that employ series-style energy recovery coils wrapped around the cooling coil.

WSEC Ref	Differences
1436	Different but can be easily changed
Description of Differences	
<ul style="list-style-type: none"> WSEC provides 65°F return temp vs IECC mandated design return air. IECC effectiveness is calculated based on enthalpy. IECC has more explicit exceptions. IECC addresses both heating and cooling. WSEC only heating. WSEC more enforceable. 	
SubTAG Recommendation	
<ul style="list-style-type: none"> Keep IECC language except insert WSEC 50% effectiveness definition. Amend IECC language 	
Consensus?	
Amend IECC language	

WSEC Ref	Differences
1413.4	WSEC only
Description of Differences	
<p>1413.4 Humidification: If an air economizer is required on a cooling system for which humidification equipment is to be provided to maintain minimum indoor humidity levels, then the humidifier shall be of the adiabatic type (direct evaporative media or fog atomization type).</p> <p>EXCEPTIONS: 1. Health care facilities where WAC 246-320-525 allows only steam injection humidifiers in ductwork downstream of final filters.</p> <p>2. Systems with water economizer</p> <p>3. 100% outside air systems with no provisions for air recirculation to the central supply fan.</p> <p>4. Nonadiabatic humidifiers cumulatively serving no more than 10% of a building's air economizer capacity as measured in cfm. This refers to the system cfm serving rooms with stand alone or duct mounted humidifiers.</p>	
SubTAG Recommendation	
<ul style="list-style-type: none"> Substitute WSEC language via amendment. 	
Consensus?	
Include WSEC language via amendment	

803.2.7 ~~803.2.8~~ Duct and plenum insulation and sealing. All supply and return air ducts and plenums shall be insulated with a minimum of R-5 insulation when located in unconditioned spaces and with a minimum of R-8 insulation when located outside the building. When located within a building envelope assembly, the duct or plenum shall be separated from the building exterior or unconditioned or exempt spaces by a minimum of R-8 insulation.

Exceptions:

1. When located within equipment.
2. When the design temperature difference between the interior and exterior of the duct or plenum does not exceed 15°F ($\Delta 8^{\circ}\text{C}$)

All joints, longitudinal and transverse seams and connections in ductwork, shall be securely fastened and sealed with welds, gaskets, mastics (adhesives), mastic-plus-embedded-fabric systems or tapes. Tapes and mastics used to seal ductwork shall be listed and labeled in accordance with UL 181A and shall be marked "181A-P" for pressure-sensitive tape, "181A-M" for mastic or "181A-H" for heat-sensitive tape. Tapes and mastics used to seal flexible air ducts and flexible air connectors shall comply with UL 181B and shall be marked "181B-FX" for pressure-sensitive tape or "181B-M" for mastic. Duct connections to flanges of air distribution system equipment shall be sealed and mechanically fastened. Unlisted

duct tape is not permitted as a sealant on any ~~metal~~ ducts. ¹³

WSEC Ref	Differences
1414.1, 1414.2	Different but can be easily changed
Description of Differences	
<ul style="list-style-type: none"> WSEC is R-7 and R-5.3 vs IECC R-8 and R-5. WSEC has outside air shaft insulation requirement. IECC sealing references UL181, WSEC references SMACNA (verify RS-7). 	
SubTAG Recommendation	
Substitute WSEC outside air shaft language only. Otherwise keep IECC language.	
Consensus?	
Amend IECC language	

803.2.7.1 ~~803.2.8.1~~ Duct construction. Ductwork shall be constructed and erected in accordance with the *International Mechanical Code*.

WSEC Ref	Differences
None	IECC only
Description of Differences	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

803.2.7.1.1 ~~803.2.8.1.2~~ Low-pressure duct systems. All longitudinal and transverse joints, seams and connections of supply and return ducts operating at a static pressure less than or equal to 2 inches w.g. (500 Pa) shall be securely fastened and sealed with welds, gaskets, mastics (adhesives), mastic-plus-embedded-fabric systems or tapes installed in accordance with the manufacturer's installation instructions. Pressure classifications specific to the duct system shall be clearly indicated on the construction documents in accordance with the *International Mechanical Code*.

Exception: Continuously welded and locking-type longitudinal joints and seams on ducts operating at static pressures less than 2 inches w.g. (500 Pa) pressure classification.

¹³ EC80 AS

WSEC Ref	Differences
1414.1	Different but can be easily changed
Description of Differences	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

803.2.7.1.2 803.2.8.1.4 Medium-pressure duct systems. All ducts and plenums designed to operate at a static pressure greater than 2 inches w.g. (500 Pa) but less than 3 inches w.g. (750 Pa) shall be insulated and sealed in accordance with Section 803.2.7. Pressure classifications specific to the duct system shall be clearly indicated on the construction documents in accordance with the *International Mechanical Code*

WSEC Ref	Differences
1414.1	Different but can be easily changed
Description of Differences	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

803.2.7.1.3 High-pressure duct systems. Ducts designed to operate at static pressures in excess of 3 inches w.g. (746 Pa) shall be insulated and sealed in accordance with Section 803.2.7. In addition, ducts and plenums shall be leak-tested in accordance with the *SMACNA HVAC Air Duct Leakage Test Manual* with the rate of air leakage (CL) less than or equal to 6.0 as determined in accordance with Equation 8-2.

(Equation 8-2)

$$CL = F \times P^{0.65}$$

Where:

F =The measured leakage rate in cfm per 100square feet of duct surface.

P=The static pressure of the test.

Documentation shall be furnished by the designer demonstrating that representative sections totaling at least 25 percent of the duct area have been tested and that all tested sections meet the requirements of this section.

WSEC Ref	Differences
1414.1	Different but can be easily changed
Description of Differences	
<ul style="list-style-type: none"> Testing not required in WSEC IECC testing requirement will be painful if retained 	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

803.2.8 803.3.7 Piping insulation. All piping serving as part of a heating or cooling system shall be thermally insulated in accordance with Table 803.2.8.

Exceptions:

- 1.Factory-installed piping within HVAC equipment tested and rated in accordance with a test procedure referenced by this code.
- 2.Piping that conveys fluids that have a design operating temperature range between 55°F (13°C) and 105°F (41°C).
- 3.Piping that conveys fluids that have not been heated or cooled through the use of fossil fuels or electric power.
- 4.Runout piping not exceeding 4 feet (1219 mm) in length and 1 inch (25 mm) in diameter between the control valve and HVAC coil.

WSEC Ref	Differences
1415.1	Different but can be easily changed
Description of Differences	
IECC Exceptions 3 and 4	
SubTAG Recommendation	
<ul style="list-style-type: none"> Retain IECC except exception 4 should only apply to heating systems. Even this could be a safety issue? Amend IECC language—delete Exc. 3&4 	
Consensus?	
Amend the IECC language	

803.2.9 803.3.8 HVAC system completion. Prior to the issuance of a certificate of occupancy, the design professional shall provide evidence of system completion in accordance with Sections 803.2.9.1 through 803.2.9.3.

WSEC Ref	Differences
1416	Different but can be easily changed
Description of Differences	
WSEC is much more extensive	
SubTAG Recommendation	
Substitute WSEC language via amendment.	
Consensus?	
Substitute WSEC language via amendment	

803.2.9.1 ~~803.3.8.4~~ Air system balancing. Each supply air outlet and zone terminal device shall be equipped with means for air balancing in accordance with the requirements of Chapter 6 of the *International Mechanical Code*. Discharge dampers are prohibited on constant volume fans and variable volume fans with motors 25 hp (18.6 kW) and larger.

WSEC Ref	Differences
1412.7, 1416.3.1, 1416.3.2 1438	Different but can be easily changed
Description of Differences	
<ul style="list-style-type: none"> WSEC has “how to” requirements in 1416. VAV fans over 10 hp require VFD in WSEC vs 25 hp in IECC. IECC prohibits discharge dampers on constant volume fans explicitly while WSEC prohibits discharge dampers via 1416.3.2. 	
SubTAG Recommendation	
Substitute WSEC language via amendment.	
Consensus?	
Substitute WSEC language via amendment	

803.2.9.2 ~~803.3.8.2~~ Hydronic system balancing. Individual hydronic heating and cooling coils shall be equipped with means for balancing and pressure test connections.

WSEC Ref	Differences
1412.7, 1416.3.1, 1416.3.3	Different but can be easily changed
Description of Differences	
WSEC has “how to” requirements in 1416.	
SubTAG Recommendation	
Substitute WSEC language via amendment.	
Consensus?	
Substitute WSEC language via amendment	

803.2.9.3 ~~803.3.8.3~~ Manuals. The construction documents shall require that an operating and maintenance manual be provided to the building owner by the mechanical contractor. The manual shall include, at least, the following:

1. Equipment capacity (input and output) and required maintenance actions.
2. Equipment operation and maintenance manuals.
3. HVAC system control maintenance and calibration information, including wiring diagrams, schematics, and control sequence descriptions. Desired or field-determined setpoints shall be permanently recorded on control drawings, at control devices or, for digital control systems, in programming comments.
4. A complete written narrative of how each system is intended to operate.

WSEC Ref	Differences
1416.2	Substantially the same
Description of Differences	
SubTAG Recommendation	
<ul style="list-style-type: none"> Keep IECC language. Retain WSEC language 	
Consensus?	
Keep IECC language	

**TABLE 803.2.3(1) ~~803.2.2(4)~~
UNITARY AIR CONDITIONERS AND
CONDENSING UNITS, ELECTRICALLY
OPERATED,
MINIMUM EFFICIENCY REQUIREMENTS**

**TABLE 803.2.3(2) ~~803.2.2(2)~~
UNITARY AND APPLIED HEAT PUMPS,
ELECTRICALLY OPERATED,
MINIMUM EFFICIENCY REQUIREMENTS**

**TABLE 803.2.3(3) ~~803.2.2(3)~~
PACKAGED TERMINAL AIR CONDITIONERS
AND
PACKAGED TERMINAL HEAT PUMPS**

**TABLE 803.2.3(4) ~~803.2.2(4)~~
WARM AIR FURNACES AND COMBINATION
WARM AIR FURNACES/AIR-CONDITIONING
UNITS,
WARM AIR DUCT FURNACES AND UNIT
HEATERS, MINIMUM EFFICIENCY
REQUIREMENTS**

**TABLE 803.2.3(5) ~~803.2.2(5)~~
BOILERS, GAS- AND OIL-FIRED, MINIMUM
EFFICIENCY REQUIREMENTS**

**TABLE 803.2.3(6) ~~803.3.2(1)~~
CONDENSING UNITS, ELECTRICALLY
OPERATED, MINIMUM EFFICIENCY
REQUIREMENTS**

**TABLE 803.2.3(7) ~~803.3.2(2)~~
WATER CHILLING PACKAGES, MINIMUM
EFFICIENCY REQUIREMENTS**

**TABLE 803.2.3(8) ~~803.3.2(3)~~
COPs AND IPLVs FOR NONSTANDARD
CENTRIFUGAL CHILLERS < 150 TONS**

**TABLE 803.2.3(9) ~~803.3.2(4)~~
COPs AND IPLV FOR NONSTANDARD
CENTRIFUGAL CHILLERS
≥ 150 TONS, ≤ 300 TONS**

**TABLE 803.2.3(10) ~~803.3.2(5)~~
COPs AND IPLVs FOR NONSTANDARD
CENTRIFUGAL CHILLERS > 300 TONS**

**TABLE 803.2.3(11) ~~803.3.2(6)~~
PERFORMANCE REQUIREMENTS FOR
HEAT REJECTION EQUIPMENT**

WSEC Ref	Differences
Description of Differences	
WSEC is more stringent than IECC in almost every case WSEC does not have tables for nonstandard centrifugal chillers; IECC tables should be amended to meet ASHRAE requirements	
SubTAG Recommendation	
Amend IECC to conform to WSEC efficiencies	
Consensus?	
Amend IECC Language	

**TABLE 803.2.8 ~~803.3.7~~
MINIMUM PIPE INSULATION^a
(thickness in inches)**

803.3 ~~803.2~~ Simple HVAC systems and equipment (Prescriptive). This section applies to buildings served by unitary or packaged HVAC equipment listed in Tables 803.2.3(1) through 803.2.3(5), each serving one zone and controlled by a single thermostat in the zone served. It also applies to two-pipe heating systems serving one or more zones, where no cooling system is installed.

This section does not apply to fan systems serving multiple zones, nonunitary or nonpackaged HVAC equipment and systems or hydronic or steam heating and hydronic cooling equipment and distribution systems that provide cooling or cooling and heating which are covered by Section 803.4.

WSEC Ref	Differences
1420	Different but can be easily changed
Description of Differences	
<ul style="list-style-type: none"> WSEC has size limits Hydronic systems included in IECC IECC doesn't apply to multiple zones, variable speed drive 	
SubTAG Recommendation	
Keep IECC language.	
Consensus?	
No Consensus—Further study needed	

803.3.1 ~~803.2.6~~ Cooling with outdoor air. Supply air economizers shall be provided on each cooling system as shown in Table 803.3.1(1).

Economizers shall be capable of operating at 100-percent ~~outside~~ outdoor air, even if additional mechanical cooling is required to meet the cooling load of the building. Systems shall provide a means to relieve excess outdoor air during economizer operation to prevent overpressurizing the building. The relief air outlet shall be located to avoid recirculation into the building. Where a single room or space is supplied by multiple air systems, the aggregate capacity of those systems shall be used in applying this requirement.¹⁴

Exceptions:

1. Where the cooling equipment is covered by the minimum efficiency requirements of Table 803.2.3(1) or 803.2.3(2) and meets or exceeds the minimum cooling efficiency requirement (EER) by the percentages shown in Table 803.3.1(2).

2. Systems with air or evaporatively cooled condensers and which serve spaces with open case refrigeration or that require filtration equipment in order to meet the minimum ventilation requirements of Chapter 4 of the International Mechanical Code.

WSEC Ref	Differences
1413, 1423	Different but can be easily changed
Description of Differences	
<ul style="list-style-type: none"> IECC has no limit on the quantity of small units without economizer. WSEC limits qty to 10% or 20 tons. WSEC size limit of 20,000 btuh if installed outdoors or in mech room adjacent to outdoors. WSEC more stringent 	
SubTAG Recommendation	

¹⁴ EC75 AS

Substitute WSEC language via amendment.
Consensus?
Amend IECC Language

**TABLE 803.3.1(1)
ECONOMIZER REQUIREMENTS**

CLIMATE ZONES	ECONOMIZER REQUIREMENT
1A, 1B, 2A, 3A, 4A, 7, 8	No Requirement
2B, 3B, 3C, 4B, 4C, 5B, 5C, 6B	Economizers on All Cooling Systems ≥ 65,000 <u>54,000</u> Btu/h ¹⁵
5A, 6A	Economizers on All Cooling Systems ≥ 135,000 Btu/h

For SI: 1 British thermal unit per hour = 0.293 W.

**TABLE 803.3.1(2)
EQUIPMENT EFFICIENCY PERFORMANCE
EXCEPTION FOR ECONOMIZERS (does not
apply in Washington)**

803.3.2 803.2.4 Hydronic system controls. Hydronic systems of at least 300,000 Btu/h (87,930 W) design output capacity supplying heated and chilled water to comfort conditioning systems shall include controls that meet the requirements of Section 803.4.3.

WSEC Ref	Differences
none	No WSEC section
Description of Differences	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

WSEC Ref	Differences
1422	No IECC section
Description of Differences	
1422 Controls: In addition to the control requirements in Section 1412, where separate heating and cooling equipment serve the same temperature zone, thermostats shall be interlocked to prevent simultaneous heating and cooling. Systems which provide heating and cooling simultaneously to a zone are prohibited.	

SubTAG Recommendation
Substitute WSEC language via amendment.
Consensus?
Include WSEC language via amendment

803.4 803.3 Complex HVAC systems and equipment (Prescriptive). This section applies to buildings served by HVAC equipment and systems not covered in Section 803.3.

WSEC Ref	Differences
1430	Substantially the same
Description of Differences	
WSEC allows simple systems to comply with complex systems sections.	
SubTAG Recommendation	
<ul style="list-style-type: none"> Add WSEC language allowing simple systems to comply with complex systems sections via amendment. Keep IECC language 	
Consensus?	
Amend IECC language	

803.4.1 803.3.3.5 Economizers. Supply air economizers shall be provided on each cooling system according to Table 803.3.1(1). Economizers shall be capable of operating at 100 percent outside air, even if additional mechanical cooling is required to meet the cooling load of the building.

Exceptions: 1.Systems utilizing water economizers that are capable of cooling supply air by direct or indirect evaporation or both and providing 100 percent of the expected system cooling load at outside air temperatures of 50°F (10°C) dry bulb/45°F (7°C) wet bulb and below.

2.Where the cooling equipment is covered by the minimum efficiency requirements of Table 803.2.3(1), 803.2.3(2), or 803.2.3(6) and meets or exceeds the minimum EER by the percentages shown in Table 803.3.1(2)

3.Where the cooling equipment is covered by the minimum efficiency requirements of Table 803.2.3(7) and meets or exceeds the minimum integrated part load value (IPLV) by the percentages shown in Table 803.3.1(2).

¹⁵ EC76 AS

WSEC Ref	Differences
1413, 1423	Different but can be easily changed
Description of Differences	
<ul style="list-style-type: none"> Water economizer temperatures more restrictive in IECC Water economizer limit of 500 tons in WSEC WSEC has more clarification on water economizer requirements. IECC has no limit on the quantity of units without economizer. WSEC limits qty to 20% or 40 tons. WSEC has exceptions for site energy recovery, special filtration, systems that effect other systems, prescriptive heat pump approach. 	
SubTAG Recommendation	
Substitute WSEC language via amendment.	
Consensus?	
Amend IECC language	

WSEC Ref	Differences
1432.2.1	No IECC section
Description of Differences	
<p>1432.2.1 Air Systems for Multiple Zones: Systems supplying heated or cooled air to multiple zones shall include controls which automatically reset supply air temperatures by representative building loads or by outside air temperature. Temperature shall be reset by at least 25% of the design supply-air-to-room-air temperature difference.</p> <p>EXCEPTION: Where specified humidity levels are required to satisfy process needs, such as computer rooms or museums.</p>	
SubTAG Recommendation	
Substitute WSEC language via amendment.	
Consensus?	
Include WSEC language via amendment	

803.4.2 ~~803.3.3.6~~ Variable air volume (VAV) fan control. Individual VAV fans with motors of 25 horsepower (18.8 kW) ~~10 horsepower (7.5 kW)~~ or greater shall be:

1. Driven by a mechanical or electrical variable speed drive; or
2. The fan motor shall have controls or devices that will result in fan motor demand of no more than 30 percent of their design wattage at 50 percent of design air flow when static pressure set point equals one-third of the total design static pressure, based on manufacturer's certified fan data.¹⁶

¹⁶ EC85 AS

For systems with direct digital control of individual zone boxes reporting to the central control panel, the static pressure set point shall be reset based on the zone requiring the most pressure, i.e., the set point is reset lower until one zone damper is nearly wide open.¹⁷

WSEC Ref	Differences
1438	Different but can be easily changed
Description of Differences	
<ul style="list-style-type: none"> IECC has static pressure reset. IECC has performance criteria for devices other than VFDs 	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

803.4.3 ~~803.3.3.7~~ Hydronic systems controls. The heating of fluids that have been previously mechanically cooled and the cooling of fluids that have been previously mechanically heated shall be limited in accordance with Sections 803.4.3.1 through 803.4.3.3. Hydronic heating systems comprised of multiple-packaged boilers and designed to deliver conditioned water or steam into a common distribution system shall include automatic controls capable of sequencing operation of the boilers. Hydronic heating systems comprised of a single boiler and greater than 500,000 Btu/h input design capacity shall include either a multistaged or modulating burner.

WSEC Ref	Differences
none	IECC only
Description of Differences	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

803.4.3.1 ~~803.3.3.7.1~~ Three-pipe system. Hydronic systems that use a common return system for both hot water and chilled water are prohibited.

WSEC Ref	Differences
None	IECC only
Description of Differences	
SubTAG Recommendation	

¹⁷ EC84 AS

Keep IECC language
Consensus?
Keep IECC language

803.4.3.2 803.3.3.7.2 Two-pipe changeover system. Systems that use a common distribution system to supply both heated and chilled water shall be designed to allow a dead band between changeover from one mode to the other of at least 15°F (8.3°C) outside air temperatures; be designed to and provided with controls that will allow operation in one mode for at least 4 hours before changing over to the other mode; and be provided with controls that allow heating and cooling supply temperatures at the changeover point to be no more than 30°F (16.7°C) apart.

WSEC Ref	Differences
None	IECC only
Description of Differences	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

803.4.3.3 803.3.3.7.3 Hydronic (water loop) heat pump systems. Hydronic heat pumps connected to a common heat pump water loop with central devices for heat rejection and heat addition shall have controls that are capable of providing a heat pump water supply temperature dead band of at least 20°F (11.1°C) between initiation of heat rejection and heat addition by the central devices. For Climate Zones 3 through 8 as indicated in Figure 301.1 and Table 301.1, if a closed-circuit cooling tower is used, either an automatic valve shall be installed to bypass all but a minimal flow of water around the tower, or lower leakage positive closure dampers shall be provided. If an open-circuit tower is used directly in the heat pump loop, an automatic valve shall be installed to bypass all heat pump water flow around the tower. If an open-circuit cooling tower is used in conjunction with a separate heat exchanger to isolate the cooling tower from the heat pump loop, then heat loss shall be controlled by shutting down the circulation pump on the cooling tower loop. Each hydronic heat pump on the hydronic system having a total pump system power exceeding 10 horsepower (hp) (7.5 kW) shall have a two-position valve.

Exception: Where a system loop temperature optimization controller is installed and can determine the most efficient operating temperature based on real time conditions of demand and capacity, dead bands of less than 20°F (Δ11.1°C) shall be permitted.

WSEC Ref	Differences
None	IECC only
Description of Differences	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

803.4.3.4 803.3.3.7.4 Part load controls. Hydronic systems greater than or equal to 300,000 Btu/h (87,930 W) in design output capacity supplying heated or chilled water to comfort conditioning systems shall include controls that have the capability to:

1. Automatically reset the supply-water temperatures using zone-return water temperature, building-return water temperature, or outside air temperature as an indicator of building heating or cooling demand. The temperature shall be capable of being reset by at least 25 percent of the design supply-to-return water temperature difference; or
2. Reduce system pump flow by at least 50 percent of design flow rate utilizing adjustable speed drive(s) on pump(s), or multiple-staged pumps where at least one-half of the total pump horsepower is capable of being automatically turned off or control valves designed to modulate or step down, and close, as a function of load, or other approved means.

WSEC Ref	Differences
1432.2.1	Different but can be easily changed
Description of Differences	
<ul style="list-style-type: none"> ▪ IECC kicks in at 300,000 vs 600,000 for WSEC. ▪ IECC requires variable volume pumping where WSEC does not. ▪ IECC more stringent, higher cost, conforms to nat'l std 	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

803.4.3.5 803.3.3.7.5 Pump isolation. Chilled water plants including more than one chiller shall have the capability to reduce flow automatically through the chiller plant when a chiller is shut down. Chillers piped in series for the purpose of increased temperature differential, shall be considered as one chiller.

Boiler plants including more than one boiler shall have the capability to reduce flow automatically through the boiler plant when a boiler is shut down.

WSEC Ref	Differences
None	IECC only
Description of Differences	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

803.4.4 803.3.3.8 Heat rejection equipment fan speed control. Each fan powered by a motor of 7.5 hp (5.6 kW) or larger shall have the capability to operate that fan at two-thirds of full speed or less, and shall have controls that automatically change the fan speed to control the leaving fluid temperature or condensing temperature/pressure of the heat rejection device.

Exception: Factory-installed heat rejection devices within HVAC equipment tested and rated in accordance with Tables 803.2.3(6) through 803.2.3(11).

WSEC Ref	Differences
none	IECC only
Description of Differences	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

803.4.5 803.3.4 Requirements for complex mechanical systems serving multiple zones. Sections 803.4.5.1 through 803.4.5.3 shall apply to complex mechanical systems serving multiple zones. Supply air systems serving multiple zones shall be VAV systems which, during periods of occupancy, are designed and capable of being controlled to reduce primary air supply to each zone to one of the following before reheating, recooling or mixing takes place:

1. Thirty percent of the maximum supply air to each zone.
2. Three hundred cfm (142 L/s) or less where the maximum flow rate is less than 10 percent of the total fan system supply airflow rate.

3. The minimum ventilation requirements of Chapter 4 of the *International Mechanical Code*.

Exception: The following define when individual zones or when entire air distribution systems are exempted from the requirement for VAV control:

1. Zones where special pressurization relationships or cross-contamination requirements are such that VAV systems are impractical.
2. Zones or supply air systems where at least 75 percent of the energy for reheating or for providing warm air in mixing systems is provided from a site-recovered or site-solar energy source.
3. Zones where special humidity levels are required to satisfy process needs.
4. Zones with a peak supply air quantity of 300 cfm (142 L/s) or less and where the flow rate is less than 10 percent of the total fan system supply airflow rate.
5. Zones where the volume of air to be reheated, recooled or mixed is no greater than the volume of outside air required to meet the minimum ventilation requirements of Chapter 4 of the *International Mechanical Code*.
6. Zones or supply air systems with thermostatic and humidistatic controls capable of operating in sequence the supply of heating and cooling energy to the zone(s) and which are capable of preventing reheating, recooling, mixing or simultaneous supply of air that has been previously cooled, either mechanically or through the use of economizer systems, and air that has been previously mechanically heated.

WSEC Ref	Differences
1435	Substantially the same
Description of Differences	
WSEC exception 1b has no IECC equivalent—30% stop is IECC version	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

WSEC Ref	Differences
1431.1	No IECC section
Description of Differences	
1431.1 Field-Assembled Equipment and Components: Field-assembled equipment and components from more than one manufacturer shall show compliance with this section and Section 1411 through calculations of total on-site energy input and output. The combined component efficiencies as measured per Section 1411.2, shall be in compliance with the requirements of Section 1411.1. Total on-site energy input to the equipment shall be determined by combining the energy inputs to all components, elements and accessories such as compressors, internal circulating pumps, purge devices, viscosity control heaters and controls.	
SubTAG Recommendation	
Substitute WSEC language via amendment.	
Consensus?	
Retain WSEC language via amendment	

WSEC Ref	Differences
1432.1	No IECC language
Description of Differences	
1432.1 Setback and Shut-Off: Systems that serve zones with different uses, as defined in Table 15-1, 1. shall be served by separate systems, or 2. shall include isolation devices and controls to shut-off or set back the supply of heating and cooling to each zone independently. EXCEPTION: Isolation or separate systems are not required for zones expected to operate continuously or expected to be inoperative only when all other zones are inoperative.	
SubTAG Recommendation	
Substitute WSEC language via amendment.	
Consensus?	
Retain WSEC language via amendment	

WSEC Ref	Differences
1434	No IECC section
Description of Differences	
1434 Separate Air Distribution Systems: Zones with special process temperature requirements and/or humidity requirements shall be served by separate air distribution systems from those serving zones requiring only comfort conditions; or shall include supplementary control provisions so that the primary systems may be specifically controlled for comfort purposes only. EXCEPTION: Zones requiring only comfort heating or comfort cooling that are served by a system primarily used for process temperature and humidity control provided that: 1. The total supply air to those comfort zones is no more than 25% of the total system supply air, or 2. The total conditioned floor area of the zones is less than 1,000 square feet.	
SubTAG Recommendation	
Substitute WSEC language via amendment.	
Consensus?	
Retain WSEC language via amendment	

WSEC Ref	Differences
1437	No IECC section
Description of Differences	
1437 Electric Motor Efficiency: Design A & B squirrel-cage, T-frame induction permanently wired polyphase motors of 1 hp or more having synchronous speeds of 3,600, 1,800 and 1,200 rpm shall have a nominal full-load motor efficiency no less than the corresponding values for energy efficient motors provided in Table 14-4. EXCEPTIONS: 1. Motors used in systems designed to use more than one speed of a multi-speed motor. 2. Motors used as a component of the equipment meeting the minimum equipment efficiency requirements of Section 1411 and Tables 14-1A through 14-1G provided that the motor input is included when determining the equipment efficiency. 3. Motors that are an integral part of specialized process equipment. 4. Where the motor is integral to a listed piece of equipment for which no complying motor has been approved.	
SubTAG Recommendation	
Substitute WSEC language via amendment.	
Consensus?	
Amend IECC language to add standard.	

803.4.5.1 803.3.4.4 Single duct variable air volume (VAV) systems, terminal devices. Single duct VAV systems shall use terminal devices capable of reducing the supply of primary supply air before reheating or recooling takes place.

WSEC Ref	Differences
	IECC Only
Description of Differences	
Reasonable requirement	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

803.4.5.2 803.3.4.2 Dual duct and mixing VAV systems, terminal devices. Systems that have one warm air duct and one cool air duct shall use terminal devices which are capable of reducing the flow from one duct to a minimum before mixing of air from the other duct takes place.

WSEC Ref	Differences
None	IECC only
Description of Differences	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

803.4.5.3 803.3.4.3 Single fan dual duct and mixing VAV systems, economizers. Individual dual duct or mixing heating and cooling systems with a single fan and with total capacities greater than 90,000 Btu/h [(26 375 W) 7.5 tons] shall not be equipped with air economizers.

WSEC Ref	Differences
None	IECC only
Description of Differences	
System not allowed per WSEC economizer requirements	
SubTAG Recommendation	
Do not adopt this section	
Consensus?	
Delete IECC language via amendment	

803.4.6 803.3.9 Heat recovery for service water heating. Condenser heat recovery shall be installed for heating or reheating of service hot water provided the facility operates 24 hours a day, the total installed heat capacity of water-cooled systems exceeds 6,000,000 Btu/hr of heat rejection, and the design service water heating load exceeds 1,000,000 Btu/h.

The required heat recovery system shall have the capacity to provide the smaller of:

- 1.Sixty percent of the peak heat rejection load at design conditions; or
- 2.The preheating required to raise the peak service hot water draw to 85°F (29°C).

Exceptions:1.Facilities that employ condenser heat recovery for space heating or reheat purposes with a heat recovery design exceeding 30 percent of the peak water-cooled condenser load at design conditions.
2.Facilities that provide 60 percent of their service water heating from site solar or site recovered energy or from other sources.

WSEC Ref	Differences
none	IECC only
Description of Differences	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

WSEC Ref	Differences
1439.1	No IECC section
Description of Differences	
<p>1439.1 Kitchen Hoods. Individual kitchen exhaust hoods larger than 5000 cfm shall be provided with make-up air sized so that at least 50% of exhaust air volume be (a) unheated or heated to no more than 60°F and (b) uncooled or cooled without the use of mechanical cooling.</p> <p>EXCEPTIONS: 1. Where hoods are used to exhaust ventilation air which would otherwise exfiltrate or be exhausted by other fan systems.</p> <p>2. Certified grease extractor hoods that require a face velocity no greater than 60 fpm.</p>	
SubTAG Recommendation	
Substitute WSEC language via amendment.	
Consensus?	
Include WSEC language via amendment	

WSEC Ref	Differences
1439.2	No IECC section
Description of Differences	
<p>1439.2 Fume Hoods: Each fume hood in buildings with fume hood systems having a total exhaust rate greater than 15,000 cfm shall include at least one of the following features:</p> <p>a. Variable air volume hood exhaust and room supply systems capable of reducing exhaust and make-up air volume to 50% or less of design values.</p> <p>b. Direct make-up (auxiliary) air supply equal to at least 75% of the exhaust rate, heated no warmer than 2°F below room set point, cooled to no cooler than 3°F above room set point, no humidification added, and no simultaneous heating and cooling used for dehumidification control.</p> <p>c. Heat recovery systems to precondition make-up air in accordance with Section 1436, without using any exception.</p> <p>d. Constant volume fume hood designed and installed to operate at less than 50 fpm face velocity.</p>	
SubTAG Recommendation	
Substitute WSEC language via amendment.	
Consensus?	
Include WSEC language via amendment	

SECTION 804

SERVICE WATER HEATING (Mandatory)

804.1 General. This section covers the minimum efficiency of, and controls for, service water-heating equipment and insulation of service hot water piping.

WSEC Ref	Differences
	IECC only
Description of Differences	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

WSEC Ref	Differences
1441	WSEC only
Description of Differences	
1441 Water Heater Installation: Electric water heaters in unconditioned spaces or on concrete floors shall be placed on an incompressible, insulated surface with a minimum thermal resistance of R-10.	
SubTAG Recommendation	
Include WSEC language via amendment	
Consensus?	
Include WSEC language via amendment	

804.2 Service water-heating equipment performance efficiency. Water-heating equipment and hot water storage tanks shall meet the requirements of Table 804.2. The efficiency shall be verified through data furnished by the manufacturer or through certification under an approved certification program.

WSEC Ref	Differences
	IECC only
Description of Differences	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

804.3 Temperature controls. Service water-heating equipment shall be provided with controls to allow a setpoint of 110°F (43°C) for equipment serving dwelling units and 90°F (32°C) for equipment serving other occupancies. The outlet temperature of lavatories in public facility rest rooms shall be limited to 110°F (43°C).

WSEC Ref	Differences
	IECC only
Description of Differences	
RCW requires setpoint of 120 degrees	
SubTAG Recommendation	
Consensus?	
Amend IECC language	

804.4 Heat traps. Water-heating equipment not supplied with integral heat traps and serving noncirculating systems shall be provided with heat traps on the supply and discharge piping associated with the equipment.

WSEC Ref	Differences
	IECC only
Description of Differences	
Prevents thermocycling	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

804.5 Pipe insulation. For automatic-circulating hot water systems, piping shall be insulated with 1 inch (25 mm) of insulation having a conductivity not exceeding 0.27 Btu per inch/h × ft² × °F (1.53 W per 25 mm/m² × K). The first 8 feet (2438 mm) of piping in noncirculating systems served by equipment without integral heat traps shall be insulated with 0.5 inch (12.7 mm) of material having a conductivity not exceeding 0.27 Btu per inch/h × ft² × °F (1.53 W per 25 mm/m² × K).

WSEC Ref	Differences
1443	
Description of Differences	
WSEC language more enforceable, easily understood	
SubTAG Recommendation	
Retain WSEC language	
Consensus?	
Amend IECC language	

804.6 Hot water system controls. Automatic-circulating hot water system pumps or heat trace shall be arranged to be conveniently turned off automatically or manually when the hot water system is not in operation.

WSEC Ref	Differences
1442	Substantially the same
Description of Differences	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

804.7 Pools. Pools shall be provided with energy conserving measures in accordance with Sections 804.7.1 through 804.7.3.

WSEC Ref	Differences
1451	
Description of Differences	
Charging language	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

WSEC Ref	Differences
1452	Substantially the same
Description of Differences	
SubTAG Recommendation	
<ul style="list-style-type: none"> ▪ Include WSEC language ▪ Keep IECC language 	
Consensus?	
Keep IECC language	

804.7.1 Pool heaters. All pool heaters shall be equipped with a readily accessible on-off switch to allow shutting off the heater without adjusting the thermostat setting. Pool heaters fired by natural gas shall not have continuously burning pilot lights.

WSEC Ref	Differences
1453	
Description of Differences	
WSEC regulates temperature	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

804.7.2 Time switches. Time switches that can automatically turn off and on heaters and pumps according to a preset schedule shall be installed on swimming pool heaters and pumps.

Exceptions:

1. Where public health standards require 24-hour pump operation.
2. Where pumps are required to operate solar- and waste-heat-recovery pool heating systems.

WSEC Ref	Differences
	IECC only
Description of Differences	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

804.7.3 Pool covers. Heated pools shall be equipped with a vapor retardant pool cover on or at the water surface. Pools heated to more than 90°F (32°C) shall have a pool cover with a minimum insulation value of R-12.

Exception: Pools deriving over 60 percent of the energy for heating from site-recovered energy or solar energy source.

WSEC Ref	Differences
1454	
Description of Differences	
WSEC more stringent	
SubTAG Recommendation	
Amend the IECC language	
Consensus?	
Amend the IECC language	

SECTION 805
ELECTRICAL POWER AND
LIGHTING SYSTEMS
(Mandatory)

101.4.3 Additions, alterations, renovations or repairs. Additions, alterations, renovations or repairs to an existing building, building system or portion thereof shall conform to the provisions of this code as they relate to new construction without requiring the unaltered portion(s) of the existing building or building system to comply with this code. Additions, alterations, renovations, or repairs shall not create an unsafe or hazardous condition or overload existing building systems.

Exceptions: The following need not comply provided the energy use of the building is not increased.

1. Storm windows installed over existing fenestration.
2. Glass only replacements in an existing sash and frame.
3. Existing ceiling, wall or floor cavities exposed during construction provided that these cavities are filled with insulation.
4. Construction where the existing roof, wall or floor cavity is not exposed.

WSEC Ref	Differences
1132, 1132.3	Different but can be easily changed
Description of Differences	
No 60% rule or new wiring requirements	
SubTAG Recommendation	
Substitute WSEC language via amendment	
Consensus?	
Substitute WSEC language	

805.1 General (Mandatory). This section covers lighting system controls, the connection of ballasts, the maximum lighting power for interior applications, and minimum acceptable lighting equipment for exterior applications.

Exception: Lighting within dwelling units.

WSEC Ref	Differences
1510	Different but can be easily changed
Description of Differences	
Compliance path options	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

805.2 Lighting controls (Mandatory). Lighting systems shall be provided with controls as required in Sections 805.2.1, 805.2.2, 805.2.3 and 805.2.4.

WSEC Ref	Differences
1513	Same
Description of Differences	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

805.2.1 Interior lighting controls. Each area enclosed by walls or floor-to-ceiling partitions shall have at least one manual control for the lighting serving that area. The required controls shall be located within the area served by the controls or be a remote switch that identifies the lights served and indicates their status.

Exceptions:

- 1.Areas designated as security or emergency areas that must be continuously lighted.
- 2.Lighting in stairways or corridors that are elements of the means of egress.

WSEC Ref	Differences
1513.1	Substantially the same
Description of Differences	
Exceptions are different	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

805.2.2 Additional controls. Each area that is required to have a manual control shall have additional controls that meet the requirements of Sections 805.2.2.1 and 805.2.2.2.

Exceptions:

- ~~1. Areas that have only one luminaire.~~
- ~~2. Areas that are controlled by an occupant-sensing device.~~
- ~~3. Corridors, storerooms, restrooms or public lobbies.~~
- ~~4. Guestrooms (See Section 805.2.3).¹⁸~~

¹⁸ EC92 AS

WSEC Ref	Differences
Description of Differences	
SubTAG Recommendation	
Consensus?	

WSEC Ref	Differences
1513.2 Area controls.	WSEC only
Description of Differences	
Maximum power limitations do not seem to exist in IECC? What does this accomplish? Does it need to be here?	
SubTAG Recommendation	
Substitute WSEC language via amendment: 1513.2 Area Controls: The maximum lighting power that may be controlled from a single switch or automatic control shall not exceed that which is provided by a 20 ampere circuit loaded to not more than 80%. A master control may be installed provided the individual switches retain their capability to function independently. Circuit breakers may not be used as the sole means of switching. EXCEPTIONS: <ol style="list-style-type: none"> 1. Industrial or manufacturing process areas, as may be required for production. 2. Areas less than 5% of the building footprint for footprints over 100,000 ft². 	
Consensus?	
Add the WSEC language	

805.2.2.1 Light reduction controls. Each area that is required to have a manual control shall also allow the occupant to reduce the connected lighting load in a reasonably uniform illumination pattern by at least 50 percent. Lighting reduction shall be achieved by one of the following or other approved method:

1. Controlling all lamps or luminaires;
2. Dual switching of alternate rows of luminaires, alternate luminaires or alternate lamps;
3. Switching the middle lamp luminaires independently of the outer lamps; or
4. Switching each luminaire or each lamp.

Exceptions:

1. Areas that have only one luminaire.
2. Areas that are controlled by an occupant-sensing device.
3. Corridors, storerooms, restrooms or public lobbies.
4. Guestrooms (see Section 805.2.3).
5. Spaces that use less than 0.6 watts per square foot (6.5 W/m²).

WSEC Ref	Differences
	IECC only
Description of Differences	
Not in WA NREC	
SubTAG Recommendation	
<ul style="list-style-type: none"> ▪ Keep IECC language ▪ Delete via amendment 	
Consensus?	
Keep IECC language	

805.2.2.2 Automatic lighting shutoff. Buildings larger than 5,000 square feet (465 m²) shall be equipped with an automatic control device to shut off lighting in those areas. This automatic control device shall function on either:

1. A scheduled basis, using time-of-day, with an independent program schedule that controls the interior lighting in areas that do not exceed 25,000 square feet (2323 m²) and are not more than one floor; or
2. ~~An unscheduled basis by occupant intervention. An occupant sensor that shall turn lighting off within 30 minutes of an occupant leaving a space; or~~
3. A signal from another control or alarm system that indicates the area is unoccupied.

Exception: Guestrooms (see Section 805.2.3).¹⁹

4. An unscheduled basis by occupant intervention.
Exception: The following shall not require an automatic control device:
 - a. Lighting in spaces where patient care is directly provided.
 - b. Spaces where an automatic shutoff would endanger occupant safety or security.²⁰

WSEC Ref	Differences
1513.6	Substantially the same
Description of Differences	
All school classrooms, office areas less than 300 ft ² required in WSEC	
SubTAG Recommendation	
<ul style="list-style-type: none"> ▪ Add- Within these buildings, all office areas less than 300 ft² enclosed by walls or ceiling height partitions, and all meeting and conference rooms, and all school classrooms, shall be equipped with occupancy sensors ▪ Add to Exemptions <ol style="list-style-type: none"> d. Lighting intended for 24-hour operation e. Emergency lighting systems 	
Consensus?	
Amend IECC with WSEC language as noted	

805.2.2.2.1 Occupant override. Where an automatic time switch control device is installed to comply with Section 805.2.2.2, Item 1, it shall incorporate an override switching device that:

¹⁹ EC91 AS

²⁰ EC92 AM

1. Is readily accessible.
2. Is located so that a person using the device can see the lights or the area controlled by that switch, or so that the area being lit is annunciated.
3. Is manually operated.
4. Allows the lighting to remain on for no more than 2 hours when an override is initiated.
5. Controls an area not exceeding 5,000 square feet (465 m²).

Exceptions: 1. In malls and arcades, auditoriums, single-tenant retail spaces, industrial facilities and arenas, where captive-key override is utilized, override time may exceed 2 hours.

2. In malls and arcades, auditoriums, single-tenant retail spaces, industrial facilities and arenas, the area controlled may not exceed 20,000 square feet (1860 m²).

WSEC Ref	Differences
1513.6.2	Substantially the same
Description of Differences	
Definition of “automatic time switch” in WSEC, not defined in IECC	
Exceptions in IECC	
SubTAG Recommendation	
<ul style="list-style-type: none"> ▪ Keep IECC language ▪ Add definition of “time switch” 	
Consensus?	
Keep IECC language and include WSEC definition of time switch	

805.2.2.2.2 Holiday scheduling. If an automatic time switch control device is installed in accordance with Section 805.2.2.2, Item 1, it shall incorporate an automatic holiday scheduling feature that turns off all loads for at least 24 hours, then resumes the normally scheduled operation.

Exception: Retail stores and associated malls, restaurants, grocery stores, churches and theaters.

WSEC Ref	Differences
	IECC only
Description of Differences	
SubTAG Recommendation	
<ul style="list-style-type: none"> ▪ Keep IECC language ▪ Delete via amendment 	
Consensus?	
Delete via amendment	

805.2.3 Guestrooms. Guestrooms in hotels, motels, boarding houses or similar buildings shall have at least one master switch at the main entry door that controls all

permanently wired luminaires and switched receptacles, except those in the bathroom(s). Suites shall have a control meeting these requirements at the entry to each room or at the primary entry to the suite.

WSEC Ref	Differences
	IECC only
Description of Differences	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

~~**805.2.4 Exterior lighting controls.** Automatic switching or photocell controls shall be provided for all exterior lighting not intended for 24-hour operation. Automatic time switches shall have a combination seven-day and seasonal daylight program schedule adjustment, and a minimum 4-hour power backup.~~

805.2.4 Exterior Lighting Controls. Lighting for all exterior applications shall have automatic controls capable of turning off exterior lighting when sufficient daylight is available or when the lighting is not required during nighttime hours. Lighting not designated for dusk-to-dawn operation shall be controlled by an astronomical time switch. Lighting designated for dusk-to dawn operation shall be controlled by an astronomical time switch or photosensor. Astronomical time switches shall be capable of retaining programming and the time setting during loss of power for a period of at least 10 hours.

Exception: Lighting for covered vehicle entrances or exits from buildings or parking structures where required for safety, security, or eye adaptation. ²¹

WSEC Ref	Differences
1513.5	Substantially the same
Description of Differences	
IECC provides exception for covered parking	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

805.3 Tandem wiring (Mandatory). The following luminaires located within the same area shall be tandem wired:

1. Fluorescent luminaires equipped with one, three or odd-numbered lamp configurations, that are recess-

²¹ EC95 AS

mounted within 10 feet (3048 mm) center-to-center of each other.

2. Fluorescent luminaires equipped with one, three or any other odd-numbered lamp configuration, that are pendant- or surface-mounted within 1 foot (305 mm) edge-to-edge of each other.

Exceptions:

1. Where electronic high-frequency ballasts are used.
2. Luminaires on emergency circuits.
3. Luminaires with no available pair in the same area.

WSEC Ref	Differences
	IECC only
Description of Differences	
SubTAG Recommendation	
<ul style="list-style-type: none"> ▪ Keep IECC language ▪ Delete via amendment 	
Consensus?	
Delete via amendment	

WSEC Ref	Differences
1513.3	WSEC only
Description of Differences	
Daylight zone control	
SubTAG Recommendation	
<ul style="list-style-type: none"> ▪ Substitute WSEC language via amendment: 1513.3 Daylight Zone Control: All daylighted zones, as defined in Chapter 2, both under overhead glazing and adjacent to vertical glazing, shall be provided with individual controls, or daylight- or occupant-sensing automatic controls, which control the lights independent of general area lighting. Contiguous daylight zones adjacent to vertical glazing are allowed to be controlled by a single controlling device provided that they do not include zones facing more than two adjacent cardinal orientations (i.e. north, east, south, west). Daylight zones under overhead glazing more than 15 feet from the perimeter shall be controlled separately from daylight zones adjacent to vertical glazing. EXCEPTION: Daylight spaces enclosed by walls or ceiling height partitions and containing 2 or fewer light fixtures are not required to have a separate switch for general area lighting. ▪ New language? 	
Consensus?	
Include WSEC language via amendment	

WSEC Ref	Differences
1513.4	WSEC only
Description of Differences	
SubTAG Recommendation	
<ul style="list-style-type: none"> ▪ Substitute WSEC language via amendment: 1513.4 Display, Exhibition and Specialty Lighting Controls: All display, exhibition or specialty lighting shall be controlled independently of general area lighting. 	
Consensus?	
Retain WSEC language via amendment	

WSEC Ref	Differences
1513.6.1	WSEC only
Description of Differences	
SubTAG Recommendation	
Substitute WSEC language via amendment: 1513.6.1 Occupancy Sensors: Occupancy sensors shall be capable of automatically turning off all the lights in an area, no more than 30 minutes after the area has been vacated. Light fixtures controlled by occupancy sensors shall have a wall-mounted, manual switch capable of turning off lights when the space is occupied.	
Consensus?	
Retain WSEC language via amendment	

WSEC Ref	Differences
1513.7	WSEC only
Description of Differences	
Lighting control commissioning	
SubTAG Recommendation	
Substitute WSEC language via amendment: 1513.7 Commissioning Requirements: For lighting controls which include daylight or occupant sensing automatic controls, automatic shut-off controls, occupancy sensors, or automatic time switches, the lighting controls shall be tested to ensure that control devices, components, equipment and systems are calibrated, adjusted and operate in accordance with approved plans and specifications. Sequences of operation shall be functionally tested to ensure they operate in accordance with approved plans and specifications. A complete report of test procedures and results shall be prepared and filed with the owner. Drawing notes shall require commissioning in accordance with this paragraph.	
Consensus?	
Retain WSEC language	

805.4 Exit signs (Mandatory). Internally illuminated exit signs shall not exceed 5 Watts per side.

WSEC Ref	Differences
1530	Substantially the same
Description of Differences	
WSEC allows more than 5 watts but you would have to include it in calculations	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

805.5 Interior lighting power requirements (Prescriptive). A building complies with this section if its total connected lighting power calculated under Section 805.5.1 is no greater than the interior lighting power calculated under Section 805.5.2.

WSEC Ref	Differences
1531	Substantially the same
Description of Differences	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

805.5.1 Total connected interior lighting power. The total connected interior lighting power (Watts) shall be the sum of the watts of all interior lighting equipment as determined in accordance with Sections 805.5.1.1 through 805.5.1.4.

Exceptions: The connected power associated with the following lighting equipment is not included in calculating total connected lighting power.

1. Specialized medical, dental and research lighting.
2. Professional sports arena playing field lighting.
3. Display lighting for exhibits in galleries, museums and monuments.
4. Guestroom lighting in hotels, motels, boarding houses or similar buildings.
5. Emergency lighting automatically off during normal building operation.

WSEC Ref	Differences
1512.1, 1512.2	Different but can be easily changed
Description of Differences	
SubTAG Recommendation	
<ul style="list-style-type: none"> ▪ New language from ASHRAE ▪ Substitute WSEC language via amendment 	
Consensus?	
Substitute WSEC language via amendment	

805.5.1.1 Screw lamp holders. The wattage shall be the maximum labeled wattage of the luminaire.

805.5.1.2 Low-voltage lighting. The wattage shall be the specified wattage of the transformer supplying the system.

805.5.1.3 Other luminaires. The wattage of all other lighting equipment shall be the wattage of the lighting equipment verified through data furnished by the manufacturer or other approved sources.

805.5.1.4 Line-voltage lighting track and plug-in busway. The wattage shall be the greater of the wattage of the luminaires determined in accordance with Sections 805.5.1.1 through 805.5.1.3 or 30 W/linear foot (98W/lin m).

WSEC Ref	Differences
1530	Substantially the same Different but can be easily changed Different but not easily changed Does not apply to Washington IECC only / WSEC only
Description of Differences	
Wattage for line voltage track	
SubTAG Recommendation	
<ul style="list-style-type: none"> ▪ Keep IECC language – change 30 W/linear foot to 50 W/linear foot ▪ New language from ASHRAE 	
Consensus?	
Keep IECC but amend to 50 watts/linear foot	

~~**805.5.2 Interior lighting power.** The interior lighting power shall be calculated using Section 805.5.2.1 or 805.5.2.2 as applicable.~~

~~805.5.2.1 Entire building method.~~ Under this approach, the interior lighting power (Watts) is the value from Table 805.5.2 for the building type times the floor area of the entire building. The interior lighting power (Watts) shall not be increased by the allowances contained in the footnotes of Table 805.5.2 when using the entire building method.

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~~805.5.2.2 Tenant area or portion of building method.~~
805.5.2 Interior Lighting Power The total interior lighting power (Watts) is the sum of all interior lighting powers for all areas in the building covered in this permit. The interior lighting power is the floor area for each building area type listed in Table 805.5.2 times the value from Table 805.5.2 for that area. For the purposes of this method, an “area” shall be defined as all contiguous spaces that accommodate or are associated with a single area type as listed in Table 805.5.2. When this method is used to calculate the total interior lighting power for an entire building, each building area type shall be treated as a separate area.²³
 [See comments at Section 805.5]

805.6 Exterior lighting (Mandatory). When the power for exterior lighting is supplied through the energy service to the building, all exterior lighting, other than low-voltage landscape lighting, shall ~~have a source efficacy of at least 45 lumens per Watt.~~ comply with Sections 805.6.1 and 806.6.2.²⁴

Exception: Where approved because of historical, safety, signage or emergency considerations.

WSEC Ref	Differences
	IECC only
Description of Differences	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language but delete low voltage exception	

805.6.1 Exterior Building Grounds Lighting. All exterior building grounds luminaires that operate at greater than 100 watts shall contain lamps having a minimum efficacy of 60 lumens per watt unless the luminaire is controlled by a motion sensor or qualifies for one of the exceptions under Section 805.6.2.²⁵

WSEC Ref	Differences
	IECC only

²² EC99 AS

²³ EC99 AS

²⁴ EC95 AS

²⁵ EC95 AS

Description of Differences
SubTAG Recommendation
Keep IECC language
Consensus?
Keep IECC language

805.6.2 Exterior Building Lighting Power. The total exterior lighting power allowance for all exterior building applications is the sum of the individual lighting power allowances based on the densities permitted in Table 805.6.2 for these applications plus an additional unrestricted allowance of 5% of that sum. Tradeoffs are allowed only among exterior lighting applications listed in the Table 805.6.2 Tradable Surfaces section. Exterior lighting for all applications (except those included in the exceptions to Section 805.6.2) shall comply with the requirements of Section 805.6.1.

Exceptions: Lighting used for the following exterior applications is exempt when equipped with a control device independent of the control of the non-exempt lighting:

- specialized signal, directional, and marker lighting associated with transportation;
- advertising signage or directional signage;
- integral to equipment or instrumentation and is installed by its manufacturer;
- theatrical purposes, including performance, stage, film production and video production;
- athletic playing areas;
- temporary lighting;
- industrial production, material handling, transportation sites, and associated storage areas;
- theme elements in theme/amusement parks; and
- used to highlight features of public monuments and registered historic landmark structures or buildings.²⁶

WSEC Ref	Differences
1532	Different but can be easily changed
Description of Differences	
IECC provides separate table that is a lot more extensive. IECC is more stringent in most cases IECC requires more calculation	
SubTAG Recommendation	
<ul style="list-style-type: none"> Keep IECC language – see exterior table Substitute WSEC language via amendment 	
Consensus?	
No consensus—further research needed	

²⁶ EC95 AS

805.7 Electrical energy consumption (Mandatory). In buildings having individual dwelling units, provisions shall be made to determine the electrical energy consumed by each tenant by separately metering individual dwelling units.

WSEC Ref	Differences
1512, 1512.1	Different but can be easily changed
Description of Differences	
IECC has a few more exceptions	
SubTAG Recommendation	
<ul style="list-style-type: none"> Keep IECC language Substitute WSEC language via amendment 	
Consensus?	
To be determined by previous section—no consensus	

WSEC Ref	Differences
1520	WSEC only
Description of Differences	
IECC does not provide prescriptive option	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Okay to loose	

Table 805.5.2
INTERIOR LIGHTING POWER ALLOWANCES

WSEC Ref	Differences
Table 15-1	Different but can be easily changed Different but not easily changed
Description of Differences	
Significant differences Types of spaces are different No height allowance in IECC IECC is more stringent in a number of cases	
SubTAG Recommendation	
<ul style="list-style-type: none"> Keep IECC language Incorporate ASHRAE space by space Substitute WSEC language via amendment 	
Consensus?	
No consensus	

Table 805.5.2
INTERIOR LIGHTING POWER ALLOWANCES
Footnotes

WSEC Ref	Differences
Table 15-1 footnotes	Different but can be easily changed Different but not easily changed
Description of Differences	
Height adjustments not present in IECC Retail power allowance differs WSEC footnote 7 does not have equivalent provision	
SubTAG Recommendation	
<ul style="list-style-type: none"> Keep IECC language New language – There will be new language at ASHRAE for a vote in January that will clarify the retail display lighting. 	
Consensus?	
See previous—No consensus	

Table 805.6.2
Lighting Power Densities for Building Exteriors

WSEC Ref	Differences
1532	Different but can be easily changed Different but not easily changed
Description of Differences	
IECC is more complex IECC provides more specific space types	
SubTAG Recommendation	
<ul style="list-style-type: none"> Keep IECC language 	
Consensus?	
No consensus	

TABLE 805.6.2
LIGHTING POWER DENSITIES FOR BUILDING EXTERIORS

<u>Applications</u>	<u>Lighting Power Densities</u>
Tradable Surfaces (Lighting Power Densities for uncovered parking areas, building grounds, building entrances and exits, canopies and overhangs, and outdoor sales areas may be traded.)	
Uncovered Parking Areas	
<u>Parking Lots and drives</u>	<u>0.15 W/ft²</u>
Building Grounds	
<u>Walkways less than 10 feet wide</u>	<u>1.0 Watts/linear foot</u>
<u>Walkways 10 feet wide or greater, Plaza areas and Special feature areas</u>	<u>0.2 W/ft²</u>
<u>Stairways</u>	<u>1.0 W/ft²</u>
Building Entrances and Exits	
<u>Main Entries</u>	<u>30 Watts/linear foot of door width</u>
<u>Other doors</u>	<u>20 Watts/linear foot of door width</u>
Canopies and Overhangs	
<u>Canopies (free standard & attached and overhangs)</u>	<u>1.25 W/ft²</u>
Outdoor Sales	
<u>Open areas (including vehicle sales lots)</u>	<u>0.5 W/ft²</u>
<u>Street Frontage for vehicle sales lots in addition to "open area" allowance</u>	<u>20 Watts/linear foot</u>
Non-Tradable Surfaces (Lighting Power Density calculations for the following applications can be used only for the specific application and cannot be traded between surfaces or with other exterior lighting. The following allowances are in addition to any allowance otherwise permitted in the Tradable Surfaces section of this table.)	
<u>Building Facades</u>	<u>0.2 W/ft² for each illuminated wall or surface or 5.0 Watts/linear foot for each illuminated wall or surface length</u>
<u>Automated Teller Machines & Night Depositories</u>	<u>270 watts per location plus 90 watts per additional ATM per location</u>
<u>Entrances and Gatehouse Inspection Stations at guarded facilities</u>	<u>1.25 W/ft² of uncovered area (covered areas are included in the Canopies and Overhangs section of Tradable Surfaces)</u>
<u>Loading Areas for Law Enforcement, Fire, Ambulance and other Emergency Service Vehicles</u>	<u>0.5 W/ft² of uncovered area (covered areas are included in the Canopies and Overhangs section of Tradable Surfaces)</u>
<u>Drive-up Windows at Fast Food Restaurants</u>	<u>400 watts per drive-through</u>
<u>Parking near 24-hour Retail Entrances</u>	<u>800 watts per main entry</u>

~~TABLE 805.5.2(Supp) INTERIOR LIGHTING POWER~~
 (Delete Table and all footnotes, replace with the following)
TABLE 805.5.2
INTERIOR LIGHTING POWER ALLOWANCES

Lighting Power Density

<u>Building Area Type^a</u>	<u>(W/ft²)</u>
<u>Automotive Facility</u>	<u>0.9</u>
<u>Convention Center</u>	<u>1.2</u>
<u>Court House</u>	<u>1.2</u>
<u>Dining: Bar Lounge/Leisure</u>	<u>1.3</u>
<u>Dining: Cafeteria/Fast Food</u>	<u>1.4</u>
<u>Dining: Family</u>	<u>1.6</u>
<u>Dormitory</u>	<u>1.0</u>
<u>Exercise Center</u>	<u>1.0</u>
<u>Gymnasium</u>	<u>1.1</u>
<u>Healthcare-Clinic</u>	<u>1.0</u>
<u>Hospital</u>	<u>1.2</u>
<u>Hotel</u>	<u>1.0</u>
<u>Library</u>	<u>1.3</u>
<u>Manufacturing Facility</u>	<u>1.3</u>
<u>Motel</u>	<u>1.0</u>
<u>Motion Picture Theater</u>	<u>1.2</u>
<u>Multi-Family</u>	<u>0.7</u>
<u>Museum</u>	<u>1.1</u>
<u>Office</u>	<u>1.0</u>
<u>Parking Garage</u>	<u>0.3</u>
<u>Penitentiary</u>	<u>1.0</u>
<u>Performing Arts Theater</u>	<u>1.6</u>
<u>Police/Fire Station</u>	<u>1.0</u>
<u>Post Office</u>	<u>1.1</u>
<u>Religious Building</u>	<u>1.3</u>
<u>Retail^b</u>	<u>1.5</u>
<u>School/University</u>	<u>1.2</u>
<u>Sports Arena</u>	<u>1.1</u>
<u>Town Hall</u>	<u>1.1</u>
<u>Transportation</u>	<u>1.0</u>
<u>Warehouse</u>	<u>0.8</u>
<u>Workshop</u>	<u>1.4</u>

a In cases where both a general building area type and a more specific building area type are listed, the more specific building area type shall apply.

b Where lighting equipment is specified to be installed to highlight specific merchandise in addition to lighting equipment specified for general lighting and is switched or dimmed on circuits different from the circuits for general lighting, the smaller of the actual wattage of the lighting equipment installed specifically for merchandise, or 1.6 W/ft² times the area of the specific display but

not to exceed 50% of the floor area, or 3.9 W/ft² times the actual case or shelf area for displaying and selling fine merchandise ~~such as including, but not limited to~~²⁸ jewelry, fine apparel and accessories, or china and silver, shall be added to the interior lighting power determined in accordance with this line item.

²⁹

²⁸ EC101 AM

²⁹ EC99 AS

Section 806 Comparison

WSEC Ref	Differences
Throughout	Different but can be easily changed
Description of Differences	
IECC uses energy costs (and ASHRAE 90.1), WSEC does not use energy costs	
SubTAG Recommendation	
Substitute WSEC language via amendment	
Consensus?	

SECTION 806 TOTAL BUILDING PERFORMANCE

806.1 General. The proposed design complies with this section provided that

1. Sections 802.4, 802.5, 803.2, 804, 805.2, 805.3, 805.4, 805.6 and 805.7 are each satisfied, and
2. Annual energy costs of the proposed design as determined in accordance with Section 806.3 do not exceed those of the standard design as determined in accordance with Section 806.4.

WSEC Ref	Differences
RS-29, 1.1, 2.1	Different but can be easily changed
Description of Differences	
WSEC RS-29, 1.1 only allows credit for systems included in that particular permit application; WSEC RS-29, 2.1 bases comparison on energy consumption (not energy cost), only allows variations where they have been accurately and completely modeled, requires same energy sources, requires heat pump in the standard design	
SubTAG Recommendation	
Add WSEC language via amendment	
Consensus?	
No consensus	

806.2 Analysis procedures. Sections 806.2.1 through 806.2.8 shall be applied in determining total building performance.

WSEC Ref	Differences
RS-29, 1.1	Substantially the same
Description of Differences	
Editorial	
SubTAG Recommendation	

Keep IECC language	
Consensus?	
Keep IECC language	

806.2.1 Energy analysis. Annual (8,760 hours) energy costs for the standard design and the proposed design shall each be determined using the same approved energy analysis simulation tool.

WSEC Ref	Differences
RS-29, 2.3	Different but can be easily changed
Description of Differences	
WSEC bases comparison on energy consumption (not energy cost)	
SubTAG Recommendation	
Substitute WSEC language via amendment	
Consensus?	
No consensus (cost vs. consumption) For cost philosophy, Keep IECC language	

806.2.2 Climate data. The climate data used in the energy analysis shall cover a full calendar year (8,760 hours) and shall reflect approved coincident hourly data for temperature, solar radiation, humidity and wind speed for the building location.

WSEC Ref	Differences
RS-29, 2.3, 2.4b	Substantially the same
Description of Differences	
Editorial	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

806.2.3 Energy rates. The annual energy costs shall be estimated using energy rates published by the serving energy supplier and which would apply to the actual building or *DOE State-Average Energy Prices* published by DOE's Energy Information Administration and which would apply to the actual building.

WSEC Ref	Differences
	IECC only
Description of Differences	
IECC specifies basis for energy costs, WSEC does not use energy costs	

SubTAG Recommendation
Delete via amendment
Consensus?
No consensus (cost vs. consumption) For cost philosophy, No consensus

806.2.4 Nondepletable energy. Nondepletable energy collected off site shall be treated and priced the same as purchased energy. Energy from nondepletable energy sources collected on site shall be omitted from the annual energy cost of the proposed design. The analysis and performance of any nondepletable energy system shall be determined in accordance with accepted engineering practice using approved methods.

WSEC Ref	Differences
	IECC only
Description of Differences	
IECC uses energy costs, WSEC does not use energy costs	
SubTAG Recommendation	
Amend IECC language	
Consensus?	
No consensus (cost vs. consumption) For cost philosophy, accept IECC language	

806.2.5 Building operation. Building operation shall be simulated for a full calendar year (8,760 hours). Operating schedules shall include hourly profiles for daily operation and shall account for variations between weekdays, weekends, holidays, and any seasonal operation. Schedules shall model the time-dependent variations of occupancy, illumination, receptacle loads, thermostat settings, mechanical ventilation, HVAC equipment availability, service hot water usage, and any process loads.

WSEC Ref	Differences
RS-29, 2.3, 2.4	Substantially the same
Description of Differences	
Editorial	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
Keep IECC language	

806.2.6 Simulated loads. The following systems and loads shall be modeled in determining total building performance: heating systems, cooling systems, fan systems, lighting power, receptacle loads, and process loads that exceed 1.0 W/ft² (W/0.0929 m²) of floor area of the room or space in which the process loads are located.

Exception: Systems and loads serving required emergency power only.

WSEC Ref	Differences
RS-29, 2.5	Different but can be easily changed
Description of Differences	
WSEC requires all energy consumption to be modeled and provides a more-detailed list of end-use categories for reporting	
SubTAG Recommendation	
Substitute WSEC language via amendment	
Consensus?	
No consensus	

806.2.7 Service water-heating systems. Service water-heating systems that are other than combined service hot water/space-heating systems shall be omitted from the energy analysis provided all requirements in Section 804 have been met.

WSEC Ref	Differences
RS-29, 2.5, 3.5	Different but can be easily changed
Description of Differences	
WSEC requires that service water heating be modeled and provides detailed assumptions	
SubTAG Recommendation	
Substitute WSEC language via amendment	
Consensus?	

806.2.8 Exterior lighting. Exterior lighting systems shall be the same as in the standard and proposed designs.

WSEC Ref	Differences
RS-29, 3.2.2	Different but can be easily changed
Description of Differences	
WSEC provides a standard design baseline	
SubTAG Recommendation	
Substitute WSEC language via amendment	
Consensus?	

806.3 Determining energy costs for the proposed design. Building systems and loads shall be simulated in the Proposed design in accordance with Sections 806.3.1 and 806.3.2.

WSEC Ref	Differences
RS-29,	Different but can be easily changed
Description of Differences	
IECC uses energy costs, WSEC does not use energy costs	
SubTAG Recommendation	
Substitute WSEC language via amendment	
Consensus?	

806.3.1 HVAC and service water-heating equipment. All HVAC and service water-heating equipment shall be simulated in the proposed design using capacities, rated efficiencies and part-load performance data for the proposed equipment as provided by the equipment manufacturer.

WSEC Ref	Differences
RS-29, 2.4e	Substantially the same
Description of Differences	
Editorial	
SubTAG Recommendation	
Keep IECC language	
Consensus?	

806.3.2 Features not documented at time of permit. If any feature of the proposed design is not included in the building permit application, the energy performance of that feature shall be assumed to be that of the corresponding feature used in the calculations required in Section 806.4.

WSEC Ref	Differences
RS-29, 1.1	Different but can be easily changed
Description of Differences	
WSEC only allows credit for systems included in that particular permit application (but this issue is already addressed in IECC 806.1)	
SubTAG Recommendation	
Keep IECC language	
Consensus?	

806.4 Determining energy costs for the standard design. Sections 806.4.1 through 806.4.7 shall be used in determining the annual energy costs of the Standard design.

WSEC Ref	Differences
RS-29,	Different but can be easily changed
Description of Differences	
IECC uses energy costs, WSEC does not use energy costs	
SubTAG Recommendation	
Substitute WSEC language via amendment	
Consensus?	

806.4.1 Equipment efficiency. The space-heating, space-cooling, service water-heating, and ventilation systems and equipment shall meet, but not exceed, the minimum efficiency requirements of Sections 803 and 804.

WSEC Ref	Differences
RS-29, 2.1	Substantially the same
Description of Differences	
Editorial	
SubTAG Recommendation	
Keep IECC language	
Consensus?	

806.4.2 HVAC system capacities. HVAC system capacities in the standard design shall be established such that no smaller number of unmet heating and cooling load hours and no larger heating and cooling capacity safety factors are provided than in the proposed design.

WSEC Ref	Differences
RS-29, 3.4.3	Substantially the same
Description of Differences	
WSEC does not refer to the hours of loads-not-met	
SubTAG Recommendation	
Keep IECC language	
Consensus?	

806.4.3 Envelope. The thermal envelope of the standard design shall comply with the prescriptive requirements of Sections 802.1 through 802.3, as well as the mandatory provisions of Sections 802.4 through 802.5.

WSEC Ref	Differences
RS-29, 3.3.1	Substantially the same
Description of Differences	
Editorial	

SubTAG Recommendation
Keep IECC language
Consensus?

806.4.4 Identical characteristics. The heating/cooling system zoning, the orientation of each building feature, the number of floors and the gross envelope areas of the standard design shall be the same as those of the proposed design except as modified by Section 806.4.5 or 806.4.6.

Exception: Permanent fixed or movable external shading devices for windows and glazed doors shall be excluded from the standard design.

WSEC Ref	Differences
RS-29, 3.4.1, 3.1, 3.3.5	Different but can be easily changed
Description of Differences	
WSEC 3.4.1 provides more detail for the HVAC zones to be used in the modeling; WSEC 3.5.5 only allows credit for permanent shading devices	
SubTAG Recommendation	
Substitute WSEC language via amendment	
Consensus?	

806.4.5 Window area. The window area of the standard design shall be the same as the proposed design, or 35 percent of the above-grade wall area, whichever is less, and shall be distributed in a uniform pattern equally over each building facade.

WSEC Ref	Differences
RS-29, 3.3.1	Different but can be easily changed
Description of Differences	
WSEC vertical glazing maximums include skylight area and match the prescriptive table: 30% for electric heat and 45% for other fuels; WSEC allows vertical glazing to be distributed to match the proposed design	
SubTAG Recommendation	
Keep IECC language	
Consensus?	
No Consensus	

806.4.6 Skylight area. The skylight area of the standard design shall be the same as the proposed design, or 3 percent of the gross area of the roof assembly, whichever is less.

WSEC Ref	Differences
RS-29, 3.3.1	Different but can be easily changed
Description of Differences	
WSEC includes skylights in with vertical glazing when determining maximum area	
SubTAG Recommendation	
Keep IECC language	
Consensus?	

806.4.7 Interior lighting. The lighting power for the standard design shall be the maximum allowed in accordance with Section 805.5. Where the occupancy of the building is not known, the lighting power density shall be 1.5 Watts per square foot (16.1 W/m²).

WSEC Ref	Differences
RS-29, 3.2.2	Different but can be easily changed
Description of Differences	
WSEC requires the choice of a space use (this should be known based on the permit application); WSEC also addresses how to model exempt lighting; WSEC also provides a lighting schedule	
SubTAG Recommendation	
Substitute WSEC language via amendment	
Consensus?	

806.5 Documentation. The energy analysis and supporting documentation shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed. The information documenting compliance shall be submitted in accordance with Sections 806.5.1 through 806.5.4

WSEC Ref	Differences
1141.4	Different but can be easily changed
Description of Differences	
WSEC allows local building official to determine whether registered professional is required	
SubTAG Recommendation	
Keep IECC language	
Consensus?	

806.5.1 Annual energy use and associated costs.

The annual energy use and costs by energy source of the standard design and the proposed design shall be clearly indicated.

WSEC Ref	Differences
RS-29, 2.2	Different but can be easily changed
Description of Differences	
IECC uses energy costs, WSEC does not use energy costs	
SubTAG Recommendation	
Keep IECC language	
Consensus?	

806.5.2 Energy-related features. A list of the energy-related features that are included in the proposed design and on which compliance with the provisions of the code are claimed shall be provided to the code official. This list shall include and prominently indicate all features that differ from those set forth in Section 806.4 and used in the energy analysis between the standard design and the proposed design.

WSEC Ref	Differences
RS-29, 2.2	Substantially the same
Description of Differences	
IECC provides more detail	
SubTAG Recommendation	
Keep IECC language	
Consensus?	

806.5.3 Input and output report(s). Input and output report(s) from the energy analysis simulation program containing the complete input and output files, as applicable. The output file shall include energy use totals and energy use by energy source and end-use served, total hours that space conditioning loads are not met and any errors or warning messages generated by the simulation tool as applicable.

WSEC Ref	Differences
RS-29, 2.2	Substantially the same
Description of Differences	
IECC provides more detail	
SubTAG Recommendation	
Keep IECC language	
Consensus?	

806.5.4 Written explanation(s). An explanation of any error or warning messages appearing in the simulation tool output shall be provided in a written, narrative format.

WSEC Ref	Differences
RS-29, 2.2	Substantially the same
Description of Differences	
IECC provides more detail	
SubTAG Recommendation	
Keep IECC language	
Consensus?	

WSEC Ref	Differences
RS-29, 3.2	WSEC only
Description of Differences	
WSEC provides more detail on internal loads	
SubTAG Recommendation	
Add WSEC language via amendment	
Consensus?	

WSEC Ref	Differences
RS-29, 3.2.1	WSEC only
Description of Differences	
WSEC provides more detail on occupancy loads	
SubTAG Recommendation	
Add WSEC language via amendment	
Consensus?	

WSEC Ref	Differences
RS-29, 3.2.3	WSEC only
Description of Differences	
WSEC provides more detail on receptacle loads	
SubTAG Recommendation	
Add WSEC language via amendment	
Consensus?	

WSEC Ref	Differences
RS-29, 3.3.3	WSEC only
Description of Differences	
WSEC provides more detail on solar absorptivity of the building envelope and the ground	
SubTAG Recommendation	
Add WSEC language via amendment	
Consensus?	

WSEC Ref	Differences
RS-29, 3.6.1	WSEC only
Description of Differences	
WSEC requires that all spaces be modeled as heated and cooled (except warehouses)	
SubTAG Recommendation	
Add WSEC language via amendment	
Consensus?	

WSEC Ref	Differences
RS-29, 3.3.4	WSEC only
Description of Differences	
WSEC provides more detail on modeling of internal shades and blinds	
SubTAG Recommendation	
Accept IECC (no language)	
Consensus?	

WSEC Ref	Differences
RS-29, 3.6.2	WSEC only
Description of Differences	
WSEC specifies temperature setpoints for occupied and unoccupied hours	
SubTAG Recommendation	
Add WSEC language via amendment	
Consensus?	

WSEC Ref	Differences
RS-29, 3.4	WSEC only
Description of Differences	
WSEC contains an exception allowing use of a prototype system	
SubTAG Recommendation	
Accept IECC (no language)	
Consensus?	

WSEC Ref	Differences
RS-29, 3.6.3	WSEC only
Description of Differences	
WSEC requires that outside air dampers be closed during morning warm-up	
SubTAG Recommendation	
Add WSEC language via amendment	
Consensus?	

WSEC Ref	Differences
RS-29, 3.4.4	WSEC only
Description of Differences	
WSEC requires that fan power be the same and that variable speed drive be used in the standard design	
SubTAG Recommendation	
Add WSEC language via amendment	
Consensus?	

WSEC Ref	Differences
RS-29, 3.6.4	WSEC only
Description of Differences	
WSEC requires the same level of humidification in the standard design as in the proposed design	
SubTAG Recommendation	
Add WSEC language via amendment	
Consensus?	

OTHER OPTION:

Consider deleting Section 806 and instead referring to ASHRAE Standard 90.1-2004, Section 11.

WSEC Ref	Differences
RS-29 overall	??
Description of Differences	
ASHRAE Standard 90.1-2004, Section 11 provides more detail than IECC Section 806; ASHRAE also uses energy cost as the basis for the evaluation	
SubTAG Recommendation	
More analysis before recommendation?	
Consensus?	

Section 806 part 2:
Comparison of
ASHRAE/IESNA Standard 90.1-2004 (Section 11, ECB) vs RS-29

WSEC Ref	Differences
Throughout	Different but can be changed
Description of Differences	
<ul style="list-style-type: none"> - IECC (ASHRAE 90.1) uses energy costs, WSEC does not use energy costs - IECC (ASHRAE 90.1) references Standard 90.1 for baseline, WSEC references Chapters 11-15 - IECC (ASHRAE 90.1) uses matrix to establish mechanical system for Standard Design, WSEC uses same mechanical system as Proposed Design 	
SubTAG Recommendation	
Substitute WSEC language via amendment	
Consensus?	

11. ENERGY COST BUDGET METHOD

11.1 General

11.1.1 Energy Cost Budget Method Scope. The building energy cost budget method is an alternative to the prescriptive provisions of this standard. It may be employed for evaluating the compliance of all proposed designs, except designs with no mechanical system.

WSEC Ref	Differences
1141.4	Substantially the same
Description of Differences	
Editorial	
SubTAG Recommendation	
Keep IECC (ASHRAE 90.1) language	
Consensus?	
Keep IECC language	

11.1.2 Trade-Offs Limited to Building Permit. When the building permit being sought applies to less than the whole building, only the calculation parameters related to the systems to which the permit applies shall be allowed to vary. Parameters relating to unmodified existing conditions or to future building components shall be identical for both the *energy cost budget* and the *design energy cost* calculations. Future building components shall meet

the prescriptive requirements of 5.5, 6.5, 7.5, and either 9.5 or 9.6.

WSEC Ref	Differences
RS-29, 1.1	Substantially the same
Description of Differences	
Editorial	
SubTAG Recommendation	
Keep IECC (ASHRAE 90.1) language	
Consensus?	
Keep IECC language	

11.1.3 Envelope Limitation. For new buildings or *additions*, the building *energy cost budget* method results shall not be submitted for building permit approval to the *authority having jurisdiction* prior to submittal for approval of the building envelope design.

WSEC Ref	Differences
RS-29, 1.1	Substantially the same
Description of Differences	
Editorial	
SubTAG Recommendation	
Keep IECC (ASHRAE 90.1) language	
Consensus?	

11.1.4 Compliance. Compliance with Section 11 will be achieved if

- (a) all requirements of 5.4, 6.4, 7.4, 8.4, 9.4, and 10.4 are met; and
- (b) the *design energy cost*, as calculated in 11.3 does not exceed the *energy cost budget*, as calculated by the simulation program described in 11.2; and
- (c) the energy *efficiency* level of components specified in the building design meet or exceed the *efficiency* levels used to calculate the *design energy cost*.

Informative Note: *The energy cost budget and the design energy cost calculations are applicable only for determining compliance with this standard. They are not predictions of actual energy consumption or costs of the proposed design after construction. Actual experience will differ from these calculations due to variations such as occupancy, building operation and maintenance, weather, energy use not covered by this standard, changes in energy rates between design of the building and occupancy, and precision of the calculation tool.*

WSEC Ref	Differences
RS-29, 2.1	Substantially the same
Description of Differences	
Editorial	
SubTAG Recommendation	
Keep IECC (ASHRAE 90.1) language	
Consensus?	
No consensus—to be further examined	

11.1.5 Documentation Requirements. Compliance shall be documented and submitted to the *authority having jurisdiction*. The information submitted shall include the following:

- (a) The *energy cost budget* for the *budget building design* and the *design energy cost* for the *proposed design*.
- (b) A list of the energy-related features that are included in the design and on which compliance with the provisions of Section 11 is based. This list shall document all energy features that differ between the models used in the *energy cost budget* and the *design energy cost* calculations.
- (c) The input and output report(s) from the *simulation program* including a breakdown of energy usage by at least the following components: lights, internal equipment loads, service water heating equipment, space heating equipment, space cooling and heat rejection equipment, fans, and other HVAC equipment (such as pumps). The output reports shall also show the amount of time any loads are not met

by the HVAC system for both the *proposed design* and *budget building design*.

- (d) An explanation of any error messages noted in the *simulation program* output.

WSEC Ref	Differences
RS-29, 2.5	Substantially the same
Description of Differences	
Editorial	
SubTAG Recommendation	
Keep IECC (ASHRAE 90.1) language	
Consensus?	
Keep IECC language	

11.2 Simulation General Requirements

11.2.1 Simulation Program. The *simulation program* shall be a computer-based program for the analysis of energy consumption in buildings (a program such as, but not limited to, DOE-2 or BLAST). The *simulation program* shall include calculation methodologies for the building components being modeled.

Note to Adopting Authority: *The SSPC 90.1 recommends that a compliance shell implementing the rules of the compliance supplement that controls inputs to, and from, output formats from the required computer analysis program be adopted for the purposes of easier use and simpler compliance.*

11.2.1.1 The *simulation program* shall be approved by the *adopting authority* and shall, at a minimum, have the ability to explicitly model all of the following:

- (a) a minimum of 1400 hours per year;
- (b) hourly variations in occupancy, lighting power, miscellaneous equipment power, thermostat setpoints, and HVAC system operation, defined separately for each day of the week and holidays;
- (c) thermal mass effects;
- (d) ten or more thermal zones;
- (e) part-load performance curves for mechanical equipment;
- (f) capacity and *efficiency* correction curves for mechanical heating and cooling equipment;
- (g) air-side and water-side economizers with integrated control; and
- (h) the *budget building design* characteristics specified in 11.5.

WSEC Ref	Differences
RS-29, 2.3,2.4	Substantially the same
Description of Differences	

Editorial
SubTAG Recommendation
Keep IECC (ASHRAE 90.1) language
Consensus?
Keep IECC language—although should run full 8760 hours; further study

11.2.1.2 The *simulation program* shall have the ability to either
(a) directly determine the *design energy cost* and *energy cost budget* or
(b) produce hourly reports of energy use by energy source suitable for determining the *design energy cost* and *energy cost budget* using a separate calculation engine.

WSEC Ref	Differences
-	IECC (ASHRAE 90.1) only
Description of Differences	
If energy costs are used and the rates vary by time of day or if there is a demand charge, then the simulation program must provide hourly energy consumption information in order to calculate energy costs	
SubTAG Recommendation	
Keep IECC (ASHRAE 90.1) language	
Consensus?	
Keep IECC language—revisit cost basis	

11.2.1.3 The *simulation program* shall be capable of performing design load calculations to determine required
HVAC equipment capacities and air and water flow rates in accordance with 6.4.2 for both the *proposed design* and *budget building design*.

WSEC Ref	Differences
RS-29, 2.4	Substantially the same
Description of Differences	
Editorial	
SubTAG Recommendation	
Keep IECC (ASHRAE 90.1) language	
Consensus?	
Keep IECC language	

11.2.1.4 The simulation program shall be tested according to ASHRAE Standard 140 and the results shall be furnished by the software provider.

WSEC Ref	Differences
-	IECC (ASHRAE 90.1) only
Description of Differences	

Software program must meet additional criteria
SubTAG Recommendation
Keep IECC (ASHRAE 90.1) language
Consensus?
Keep IECC language

11.2.2 Climatic Data. The *simulation program* shall perform the simulation using hourly values of climatic data, such as temperature and humidity from representative climatic data, for the city in which the *proposed design* is to be located. For cities or urban regions with several climatic data entries, and for locations where weather data are not available, the designer shall select available weather data that best represent the climate at the construction site. Such selected weather data shall be approved by the *authority having jurisdiction*.

WSEC Ref	Differences
RS-29, 2.4	Substantially the same
Description of Differences	
Editorial	
SubTAG Recommendation	
Keep IECC (ASHRAE 90.1) language	
Consensus?	
Keep IECC language	

11.2.3 Purchased Energy Rates. Annual energy costs shall be determined using rates for purchased energy, such as electricity, gas, oil, propane, steam, and chilled water, and approved by the *adopting authority*.

Exception to 11.2.3: On-site renewable energy sources or site-recovered energy shall not be considered to be purchased energy and shall not be included in the *design energy cost*. Where on-site renewable or site-recovered sources are used, the *budget building design* shall be based on the energy source used as the backup energy source or electricity if no backup energy source has been specified.

WSEC Ref	Differences
-	IECC (ASHRAE 90.1) only
Description of Differences	
If energy costs are used, then a basis for the costs must be specified	
SubTAG Recommendation	
Keep IECC (ASHRAE 90.1) language	
Consensus?	
Amend to adopt RS 29 procedure	

11.2.4 Compliance Calculations. The *design energy cost* and *energy cost budget* shall be calculated using
(a) the same *simulation program*,
(b) the same weather data, and
(c) the same *purchased energy rates*.

WSEC Ref	Differences
RS-29, 2.2	Substantially the same
Description of Differences	
Delete (c) if energy consumption is used	
SubTAG Recommendation	
Keep IECC (ASHRAE 90.1) language	
Consensus?	
Amend IECC language to delete (c)	

11.2.5 Exceptional Calculation Methods. Where no *simulation program* is available that adequately models a design, material, or device, the *authority having jurisdiction* may approve an exceptional calculation method to be used to demonstrate compliance with Section 11. Applications for approval of an exceptional method to include theoretical and empirical information verifying the method's accuracy shall include the following documentation to demonstrate that the exceptional calculation method and results
(a) make no change in any input parameter values specified by this standard and the *adopting authority*;
(b) provide input and output documentation that facilitates the enforcement agency's review and meets the formatting and content required by the *adopting authority*; and
(c) are supported by instructions for using the method to demonstrate that the *energy cost budget* and *design energy cost* required by Section 11 are met.

WSEC Ref	Differences
-	IECC (ASHRAE 90.1) only
Description of Differences	
Provides option for energy efficiency features not directly modeled	
SubTAG Recommendation	
Keep IECC (ASHRAE 90.1) language	
Consensus?	
Keep IECC language	

11.3 Calculation of Design Energy Cost and Energy Cost Budget

11.3.1 The simulation model for calculating the design energy cost and the *energy cost budget* shall be developed in accordance with the requirements in Table 11.3.1.

WSEC Ref	Differences
RS-29, 3	Different but can be changed
Description of Differences	
- IECC (ASHRAE 90.1) references Standard 90.1 for baseline, WSEC references Chapters 11-15	
- IECC (ASHRAE 90.1) uses matrix to establish mechanical system for Standard Design, WSEC uses same mechanical system as Proposed Design	
More software support is available for 90.1	
SubTAG Recommendation	
Substantially revise this table to maintain consistency with WSEC; Substitute WSEC language via amendment	
Consensus?	
Table for further study	

11.3.2 HVAC Systems. The *HVAC system* type and related performance parameters for the *budget building* design shall be determined from Figure 11.3.2, the system descriptions in Table 11.3.2A and accompanying notes, and the following rules:
(a) Components and parameters not listed in Figure 11.3.2 and Table 11.3.2A or otherwise specifically addressed in this subsection shall be identical to those in the *proposed design*.

Exception to 11.3.2a: Where there are specific requirements in 6.4 and 6.5, the component *efficiency* in the *budget building design* shall be adjusted to the lowest *efficiency* level allowed by the requirement for that component type.

(b) All HVAC and service water heating equipment in the *budget building* shall be modeled at the minimum *efficiency* levels, both part load and full load, in accordance with 6.4 and 7.4.

(c) Where *efficiency* ratings, such as EER and COP, include fan energy, the descriptor shall be broken down into its components so that supply fan energy can be modeled separately. Supply and return/relief system fans shall be modeled as operating at least whenever the spaces served are occupied except as specifically noted in Table 11.3.2A.

(d) Minimum *outdoor air* ventilation rates shall be the same for both the *budget building design* and *proposed building*. Heat recovery shall be modeled for the *budget building design* in accordance with 6.5.6.1.

(e) *Budget building* systems as listed in Table 11.3.2A shall have *outdoor air* economizers or water economizers, the same as in the proposed building, in

accordance with 6.5.1. The high-limit shutoff shall be in accordance with Table 11.3.2D.

(f) If the *proposed design* system has a preheat coil, the *budget building design*'s system shall be modeled with a preheat coil controlled in the same manner.

(g) System design supply air rates for the *budget building design* shall be based on a supply-air-to-room-air temperature difference of 20°F. If return or relief fans are specified in the *proposed design*, the *budget building design* shall also be modeled with the same fan type sized for the budget system supply fan air quantity less the minimum *outdoor air*, or 90% of the supply fan air quantity, whichever is larger.

(h) Fan system *efficiency* (BHP per cfm of supply air including the effect of belt losses but excluding motor and motor drive losses) shall be the same as the *proposed design* or up to the limit prescribed in 6.5.3.1, whichever is smaller. If this limit is reached, each fan shall be proportionally reduced in brake horsepower until the limit is met. Fan electrical power shall then be determined by adjusting the calculated fan HP by the minimum motor *efficiency* prescribed by 10.4 for the appropriate motor size for each fan.

(i) The equipment capacities for the *budget building design* shall be sized proportionally to the capacities in the *proposed design* based on sizing runs; i.e., the ratio between the capacities used in the annual simulations and the capacities determined by the sizing runs shall be the same for both the *proposed design* and *budget building design*.

Unmet load hours for the *proposed design* shall not differ from unmet load hours for the *budget building design* by more than 50 hours.

(j) Each *HVAC system* in a *proposed design* is mapped on a one-to-one correspondence with one of eleven *HVAC systems* in the *budget building design*. To determine the budget building system:

WSEC Ref	Differences
RS-29, 3.4	Different but can be changed
Description of Differences	
<ul style="list-style-type: none"> - IECC (ASHRAE 90.1) references Standard 90.1 for baseline, WSEC references Chapters 11-15 - IECC (ASHRAE 90.1) uses matrix to establish mechanical system for Standard Design, WSEC uses same mechanical system as Proposed Design - More software support is available for 90.1 	
SubTAG Recommendation	
Substantially revise this table to maintain consistency with WSEC; Substitute WSEC language via amendment	
Consensus?	
Table for further study	

TABLE 11.3.1 Modeling Requirements for Calculating Design Energy Cost and Energy Cost Budget

No.	Proposed Building Design (Column A) Design Energy Cost (DEC)	Budget Building Design (Column B) Energy Cost Budget (ECB)
1. Design Model		
(a) The simulation model of the <i>proposed design</i> shall be consistent with the design documents, including proper accounting of fenestration and opaque envelope types and area; interior lighting power and controls; HVAC system types, sizes, and controls; and service water heating systems and controls. (b) All conditioned spaces in the <i>proposed design</i> shall be simulated as being both heated and cooled even if no cooling or heating system is being installed.		The <i>budget building design</i> shall be developed by modifying the <i>proposed design</i> as described in this table. Except as specifically instructed in this table, all building systems and equipment shall be modeled identically in the <i>budget building design</i> and <i>proposed design</i> .
(c) When the <i>energy cost budget</i> method is applied to buildings in which energy-related features have not yet been designed (e.g., a lighting system), those yet-to-be-designed features shall be described in the <i>proposed design</i> so that they minimally comply with applicable mandatory and prescriptive requirements from Sections 5 through 10. Where the space classification for a building is not known, the building shall be categorized as an office building.		
2. Additions and Alterations		
It is acceptable to demonstrate compliance using building models that exclude parts of the <i>existing building</i> provided all of the following conditions are met: (a) Work to be performed under the current permit application in excluded parts of the building shall meet the requirements of Sections 5 through 10. (b) Excluded parts of the building are served by HVAC systems that are entirely separate from those serving parts of the building that are included in the building model. (c) Design space temperature and HVAC system operating setpoints and schedules, on either side of the boundary between included and excluded parts of the building, are identical. (d) If a declining block or similar utility rate is being used in the analysis and the excluded and included parts of the building are on the same utility meter, the rate shall reflect the utility block or rate for the building plus the addition.		Same as Proposed Design
3. Space Use Classification		
The building type or space type classifications shall be chosen in accordance with 9.5.1 or 9.6.1. The user or designer shall specify the space use classifications using either the building type or space type categories but shall not combine the two types of categories within a single permit application. More than one building type category may be used in a building if it is a mixed-use facility.		Same as Proposed Design
4. Schedules		
The schedule types listed in 11.2.1.1 (b) shall be required input. The schedules shall be typical of the proposed building type as determined by the designer and approved by the <i>authority having jurisdiction</i> . Required schedules shall be identical for the <i>proposed design</i> and <i>budget building design</i> .		Same as Proposed Design

Table 11.3.1 (continued) Modeling Requirements for Calculating Design Energy Cost and Energy Cost Budget

No.	Proposed Building Design (Column A) Design Energy Cost (DEC)	Budget Building Design (Column B) Energy Cost Budget (ECB)
5. Building Envelope		
	<p>All components of the building envelope in the <i>proposed design</i> shall be modeled as shown on architectural drawings or as installed for <i>existing building</i> envelopes.</p> <p><i>Exceptions:</i> The following building elements are permitted to differ from architectural drawings.</p> <p>(a) Any envelope assembly that covers less than 5% of the total area of that assembly type (e.g., exterior walls) need not be separately described. If not separately described, the area of an envelope assembly must be added to the area of the adjacent assembly of that same type.</p> <p>(b) Exterior surfaces whose azimuth orientation and tilt differ by no more than 45 degrees and are otherwise the same may be described as either a single- surface or by using multipliers.</p> <p>(c) For exterior roofs other than roofs with ventilated attics, the roof surface may be modeled with a reflectance of 0.45 if the reflectance of the proposed design roof is greater than 0.70 and its emittance is greater than 0.75. The reflectance and emittance shall be tested in accordance with the Exception to 5.5.3.1. All other roof surfaces shall be modeled with a reflectance of 0.3. Manually operated fenestration shading devices such as blinds or shades shall not be modeled. Permanent shading devices such as fins, overhangs, and light shelves shall be modeled.</p> <p>(d) Manually operated fenestration shading devices such as blinds or shades shall not be modeled. Permanent shading devices such as fins, overhangs, and lightshelves shall be modeled.</p>	<p>The <i>budget building design</i> shall have identical <i>conditioned floor area</i> and identical exterior dimensions and orientations as the proposed design, except as noted in (a), (b), and (c) in this clause.</p> <p>(a) Opaque assemblies such as roof, floors, doors, and walls shall be modeled as having the same heat capacity as the <i>proposed design</i> but with the minimum U-factor required in 5.5 for new buildings or <i>additions</i> and 5.1.3 for <i>alterations</i>.</p> <p>(b) Roof albedo—All roof surfaces shall be modeled with a reflectivity of 0.3.</p> <p>(c) Fenestration—No shading projections are to be modeled; fenestration shall be assumed to be flush with the exterior wall or roof. If the fenestration area for new buildings or <i>addition</i> exceeds the maximum allowed by 5.5.4.2, the area shall be reduced proportionally along each exposure until the limit set in 5.5.4.2 is met. Fenestration U-factor shall be the minimum required for the climate, and the solar heat gain coefficient shall be the maximum allowed for the climate and orientation. The fenestration model for envelope <i>alterations</i> shall reflect the limitations on area, U-factor, and solar heat gain coefficient as described in 5.1.3.</p> <p><i>Exception:</i> When trade-offs are made between an <i>addition</i> and an <i>existing building</i> as described in Exception to 4.2.1.2, the envelope assumptions for the <i>existing Building</i> in the <i>budget building design</i> shall reflect existing conditions prior to any revisions that are part of this permit.</p>
6. Lighting		
	<p>Lighting power in the <i>proposed designs</i> shall be determined as follows:</p> <p>(a) Where a complete lighting system exists, the actual lighting power shall be used in the model.</p> <p>(b) Where a lighting system has been designed, lighting power shall be determined in accordance with either 9.5 or 9.6.</p> <p>(c) Where no lighting exists or is specified, lighting power shall be determined in accordance with the Building Area Method for the appropriate building type.</p> <p>(d) Lighting system power shall include all lighting system components shown or provided for on plans (including lamps, ballasts, task fixtures, and furniture-mounted fixtures).</p>	<p>Lighting power in the <i>budget building design</i> shall be determined using the same categorization procedure (building area or space function) and categories as the <i>proposed design</i> with lighting power set equal to the maximum allowed for the corresponding method and category in either 9.5 or 9.6. Power for fixtures not included in the lighting power density calculation shall be modeled identically in the <i>proposed design</i> and <i>budget building design</i>. Lighting controls shall be the minimum required.</p>

Table 11.3.1 (continued) Modeling Requirements for Calculating Design Energy Cost and Energy Cost Budget

No.	Proposed Building Design (Column A) Design Energy Cost (DEC)	Budget Building Design (Column B) Energy Cost Budget (ECB)
7.	Thermal Blocks – HVAC Zones Designed	
	<p>Where HVAC zones are defined on HVAC design drawings, each HVAC zone shall be modeled as a separate <i>thermal block</i>. <i>Exception:</i> Different HVAC zones may be combined to create a single <i>thermal block</i> or identical <i>thermal blocks</i> to which multipliers are applied provided all of the following conditions are met:</p> <p>(a) The space use classification is the same throughout the <i>thermal block</i>.</p> <p>(b) All HVAC zones in the <i>thermal block</i> that are adjacent to glazed exterior walls face the same orientation or their orientations are within 45 degrees of each other.</p> <p>(c) All of the zones are served by the same HVAC system or by the same kind of HVAC system.</p>	Same as Proposed Design
8.	Thermal Blocks – HVAC Zones Not Designed	
	<p>Where the HVAC zones and systems have not yet been designed, <i>thermal blocks</i> shall be defined based on similar internal load densities, occupancy, lighting, thermal and space temperature schedules, and in combination with the following guidelines: (a) Separate <i>thermal blocks</i> shall be assumed for interior and perimeter spaces. Interior spaces shall be those located more than 15 ft from an exterior wall. Perimeter spaces shall be those located closer than 15 ft from an exterior wall. (b) Separate <i>thermal blocks</i> shall be assumed for spaces adjacent to glazed exterior walls; a separate zone shall be provided for each orientation, except orientations that differ by no more than 45 degrees may be considered to be the same orientation. Each zone shall include all floor area that is 15 ft or less from a glazed perimeter wall, except that floor area within 15 ft of glazed perimeter walls having more than one orientation shall be divided proportionately between zones. (c) Separate <i>thermal blocks</i> shall be assumed for spaces having floors that are in contact with the ground or exposed to ambient conditions from zones that do not share these features. (d) Separate <i>thermal blocks</i> shall be assumed for spaces having exterior ceiling or roof assemblies from zones that do not share these features.</p>	Same as Proposed Design
9.	Thermal Blocks - Multifamily Residential Buildings	
	<p>Residential spaces shall be modeled using one <i>thermal block</i> per space except that those facing the same orientations may be combined into one <i>thermal block</i>. Corner units and units with roof or floor loads shall only be combined with units sharing these features.</p>	Same as Proposed Design

Table 11.3.1 (continued) Modeling Requirements for Calculating Design Energy Cost and Energy Cost Budget

No.	Proposed Building Design (Column A) Design Energy Cost (DEC)	Budget Building Design (Column B) Energy Cost Budget (ECB)
10. HVAC Systems	<p>The HVAC system type and all related performance parameters, such as equipment capacities and efficiencies, in the <i>proposed design</i> shall be determined as follows: (a) Where a complete HVAC system exists, the model shall reflect the actual system type using actual component capacities and efficiencies. (b) Where an HVAC system has been designed, the HVAC model shall be consistent with design documents. Mechanical equipment efficiencies shall be adjusted from actual design conditions to the standard rating conditions specified in 6.4.1, if required by the simulation model. (c) Where no heating system exists or no heating system has been specified, the heating system shall be modeled as fossil fuel. The system characteristics shall be identical to the system modeled in the <i>budget building design</i>. (d) Where no cooling system exists or no cooling system has been specified, the cooling system shall be modeled as an air-cooled single-zone system, one unit per <i>thermal block</i>. The system characteristics shall be identical to the system modeled in the <i>budget building design</i>.</p>	<p>The HVAC system type and related performance parameters for the <i>budget building design</i> shall be determined from Figure 11.3.2, the system descriptions in Table 11.3.2A and accompanying notes, and in accord with rules specified in 11.3.2 a-j.</p>
11. Service Hot Water Systems	<p>The service hot water system type and all related performance parameters, such as equipment capacities and efficiencies, in the <i>proposed design</i> shall be determined as follows:</p> <p>(a) Where a complete service hot water system exists, the model shall reflect the actual system type using actual component capacities and efficiencies. (b) Where a service hot water system has been designed, the service hot water model shall be consistent with design documents. (c) Where no service hot water system exists or is specified, no service hot water heating shall be modeled.</p>	<p>The service hot water system type and related performance in the <i>budget building design</i> shall be identical to the <i>proposed design</i> except where 7.5 applies. In this case the boiler shall be split into a separate space heating boiler and hot water heater with <i>efficiency</i> requirements set to the least efficient allowed.</p>
12. Miscellaneous Loads	<p>Receptacle, motor, and process loads shall be modeled and estimated based on the building type or space type category and shall be assumed to be identical in the <i>proposed</i> and <i>budget building design</i>. These loads shall be included in simulations of the building and shall be included when calculating the <i>energy cost budget</i> and <i>design energy cost</i>. All end-use load components within and associated with the building shall be modeled, unless specifically excluded by Sections 13 and 14 of Table 11.3.1: including, but not limited to, exhaust fans, parking garage ventilation fans, exterior building lighting, swimming pool heaters and pumps, elevators and escalators, refrigeration equipment, and cooking equipment.</p>	<p>Receptacle, motor and process loads shall be modeled and estimated based on the building type or space type category and shall be assumed to be identical in the <i>proposed</i> and <i>budget building design</i>. These loads shall be included in simulations of the building and shall be included when calculating the <i>energy cost budget</i> and <i>design energy cost</i>. All end-use load components within and associated with the building shall be modeled, unless specifically excluded by Sections 13 and 14 of Table 11.3.1: including, but not limited to, exhaust fans, parking garage ventilation fans, exterior building lighting, swimming pool heaters and pumps, elevators and escalators, refrigeration equipment, and cooking equipment.</p>

Table 11.3.1 (continued) Modeling Requirements for Calculating Design Energy Cost and Energy Cost Budget

No.	Proposed Building Design (Column A) Design Energy Cost (DEC)	Budget Building Design (Column B) Energy Cost Budget (ECB)
13. Modeling Exceptions	<p>All elements of the <i>proposed design</i> envelope, HVAC, service water heating, lighting, and electrical systems shall be modeled in the <i>proposed design</i> in accordance with the requirements of Sections 1 through 12 of Table 11.3.1.</p> <p><i>Exception:</i> Components and systems in the <i>proposed design</i> may be excluded from the simulation model provided:</p> <ul style="list-style-type: none"> (a) component energy usage does not affect the energy usage of systems and components that are being considered for trade-off; (b) the applicable prescriptive requirements of 5.5, 6.5, 7.5, and either 9.5 or 9.6 applying to the excluded components are met. 	None
14. Modeling Limitations to the Simulation Program	<p>If the simulation program cannot model a component or system included in the <i>proposed design</i>, one of the following methods shall be used with the approval of the <i>authority having jurisdiction</i>:</p> <ul style="list-style-type: none"> (a) Ignore the component if the energy impact on the trade-offs being considered is not significant. (b) Model the component substituting a thermodynamically similar component model. (c) Model the HVAC system components or systems using the <i>budget building design</i>'s HVAC system in accordance with Section 10 of Table 11.3.1. <p>Whichever method is selected, the component shall be modeled identically for both the <i>proposed design</i> and <i>budget building design</i> models.</p>	Same as Proposed Design

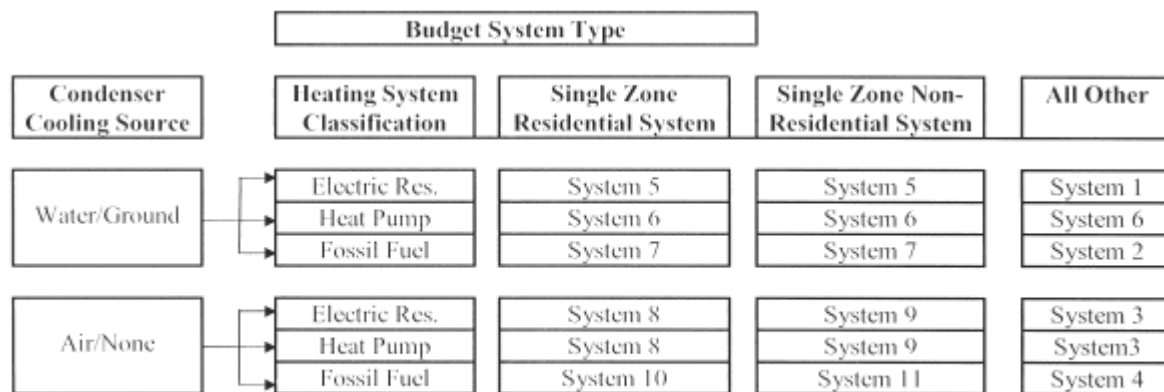


Figure 11.3.2 HVAC systems map.

1. Enter Figure 11.3.2 at “Water” if the *proposed design* system condenser is water or evaporatively cooled; enter at “Air” if the condenser is air-cooled. Closed-circuit dry coolers shall be considered air-cooled. Systems utilizing district cooling shall be treated as if the condenser water type were “water.” If no mechanical cooling is specified or the mechanical cooling system in the *proposed design* does not require heat rejection, the system shall be treated as if the condenser water type were “Air.” For proposed designs with ground-source or groundwater-source heat pumps, the budget system shall be water-source heat pump (System 6).
2. Select the path that corresponds to the *proposed design* heat source: electric resistance, heat pump (including air-source and water-source), or fuel-fired. Systems utilizing district heating (steam or hot water) shall be treated as if the heating system type were “Fossil Fuel.” Systems with no heating capability shall be treated as if the heating system type were “Fossil Fuel.” For systems with mixed fuel heating sources, the system or systems that use the secondary heating source type (the one with the smallest total installed output capacity for the spaces served by the system) shall be modeled identically in the *budget building design* and the primary heating source type shall be used in Figure 11.3.2 to determine budget system type.
3. Select the *budget building design* system category: The system under “Single Zone Residential System” shall be selected if the HVAC system in the proposed design is a single-zone system and serves a residential space. The system under “Single Zone Nonresidential System” shall be selected if the HVAC system in the proposed design is a single-zone system and serves other than residential spaces. The system under “All Other” shall be selected for all other cases.

TABLE 11.3.2A Budget System Descriptions

System No.	System Type	Fan Control	Cooling Type	Heating Type
1	Variable air volume with parallel fan-powered boxes (1)	VAV (4)	Chilled Water (5)	Electric Resistance
2	Variable air volume with reheat (2)	VAV (4)	Chilled Water (5)	Hot Water Fossil Fuel Boiler (6)
3	Packaged variable air volume with parallel fan-powered boxes (1)	VAV (4)	Direct Expansion (3)	Electric Resistance
4	Packaged variable air volume with reheat (2)	VAV (4)	Direct Expansion (3)	Hot Water Fossil Fuel Boiler (6)
5	Two-pipe fan-coil	Constant Volume (9)	Chilled Water (5)	Electric Resistance
6	Water-source heat pump	Constant Volume (9)	Direct Expansion (3)	Electric Heat Pump and Boiler (7)
7	Four-pipe fan coil	Constant Volume (9)	Chilled Water (5)	Hot Water Fossil Fuel Boiler (6)
8	Packaged terminal heat pump	Constant Volume (9)	Direct Expansion (3)	Electric Heat Pump (8)
9	Packaged rooftop heat pump	Constant Volume (9)	Direct Expansion (3)	Electric Heat Pump (8)
10	Packaged terminal air conditioner	Constant Volume (9)	Direct Expansion	Hot Water Fossil Fuel Boiler (6)
11	Packaged rooftop air conditioner	Constant Volume (9)	Direct Expansion	Fossil Fuel Furnace

Notes:

- VAV with parallel boxes:** Fans in parallel VAV fan-powered boxes shall be sized for 50% of the peak design flow rate and shall be modeled with 0.35 W/cfm fan power. Minimum volume setpoints for fan-powered boxes shall be equal to the minimum rate for the space required for ventilation consistent with 6.5.2.1
Exception (a) 1. Supply air temperature setpoint shall be constant at the design condition (see 11.3.2 (h)).
- VAV with reheat:** Minimum volume setpoints for VAV reheat boxes shall be 0.4 cfm/ft² of floor area consistent with 6.5.2.1 Exception (a) 2. Supply air temperature shall be reset based on zone demand from the design temperature difference to a 10°F temperature difference under minimum load conditions. Design air flow rates shall be sized for the reset supply air temperature, i.e., a 10°F temperature difference.
- Direct Expansion:** The fuel type for the cooling system shall match that of the cooling system in the *proposed design*
- VAV:** Constant volume can be modeled if the system qualifies for Exception (b) to 6.5.2.1. When the *proposed design* system has a supply, return, or relief fan motor 25 hp or larger, the corresponding fan in the VAV system of the *budget building design* shall be modeled assuming a variable speed drive. For smaller fans, a forward-curved centrifugal fan with inlet vanes shall be modeled. If the *proposed design's* system has a direct digital control system at the zone level, static pressure setpoint reset based on zone requirements in accordance with 6.5.3.2.3 shall be modeled.
- Chilled Water:** For systems using purchased chilled water, the chillers are not explicitly modeled and chilled water costs shall be based as determined in 11.2.3. Otherwise, the *budget building design's* chiller plant shall be modeled with chillers having the number as indicated in Table 11.3.2B as a function of *budget building* chiller plant load and type as indicated in Table 11.3.2C as a function of individual chiller load. Where chiller fuel source is mixed, the system in the *budget building design* shall have chillers with the same fuel types and with capacities having the same proportional capacity as the *proposed design's* chillers for each fuel type. Chilled water supply temperature shall be modeled at 44°F design supply temperature and 56°F return temperature. Piping losses shall not be modeled in either building model. Chilled water supply water temperature shall be reset in accordance with 6.5.4.3. Pump system power for each pumping system shall be the same as the *proposed design*; if the *proposed design* has no chilled water pumps, the *budget building design* pump power shall be 22 W/gpm (equal to a pump operating against a 75 ft head, 65% combined impeller and motor efficiency). The chilled water system shall be modeled as primary-only variable flow with flow maintained at the design rate through each chiller using a bypass. Chilled water pumps shall be modeled as riding the pump curve or with variable-speed drives when required in 6.5.4.1. The heat rejection device shall be an axial fan cooling tower with two-speed fans if required in 6.5.5. Condenser water design supply temperature shall be 85°F or 10°F approach to design wet-bulb temperature, whichever is lower, with a design temperature rise of 10°F. The tower shall be controlled to maintain a 70°F leaving water temperature where weather permits, floating up to leaving water temperature at design conditions. Pump system power for each pumping system shall be the same as the *proposed design*; if the *proposed design* has no condenser water pumps, the *budget building design* pump power shall be 19 W/gpm (equal to a pump operating against a 60 ft head, 60% combined impeller and motor efficiency). Each chiller shall be modeled with separate condenser water and chilled water pumps interlocked to operate with the associated chiller.
- Fossil Fuel Boiler:** For systems using purchased hot water or steam, the boilers are not explicitly modeled and hot water or steam costs shall be based on actual utility rates. Otherwise, the boiler plant shall use the same fuel as the *proposed design* and shall be natural draft. The *budget building design* boiler plant shall be modeled with a single boiler if the *budget building design* plant load is 600,000 Btu/h and less and with two equally sized boilers for plant capacities exceeding 600,000 Btu/h. Boilers shall be staged as required by the load. Hot water supply temperature shall be modeled at 180°F design supply temperature and 130°F return temperature. Piping losses shall not be modeled in either building model. Hot water supply water temperature shall be reset in accordance with 6.5.4.3. Pump system power for each pumping system shall be the same as the *proposed design*; if the *proposed design* has no hot water pumps, the *budget building design* pump power shall be 19 W/gpm (equal to a pump operating against a 60 ft head, 60% combined impeller and motor efficiency). The hot water system shall be modeled as primary-only with continuous variable flow. Hot water pumps shall be modeled as riding the pump curve or with variable speed drives when required by 6.5.4.1.

7. **Electric Heat Pump and Boiler:** Water-source heat pumps shall be connected to a common heat pump water loop controlled to maintain temperatures between 60°F and 90°F. Heat rejection from the loop shall be provided by an axial fan closed-circuit evaporative fluid cooler with two-speed fans if required in 6.5.5.2. Heat addition to the loop shall be provided by a boiler that uses the same fuel as the *proposed design* and shall be natural draft. If no boilers exist in the *proposed design*, the budget building boilers shall be fossil fuel. The *budget building design* boiler plant shall be modeled with a single boiler if the *budget building design* plant load is 600,000 Btu/h or less and with two equally sized boilers for plant capacities exceeding 600,000 Btu/h. Boilers shall be staged as required by the load. Piping losses shall not be modeled in either building model. Pump system power shall be the same as the *proposed design*; if the *proposed design* has no pumps, the *budget building design* pump power shall be 22 W/gpm, which is equal to a pump operating against a 75 foot head, with a 65% combined impeller and motor *efficiency*. Loop flow shall be variable with flow shutoff at each heat pump when its compressor cycles off as required by 6.5.4.4. Loop pumps shall be modeled as riding the pump curve or with variable speed drives when required by 6.5.4.1.
8. **Electric Heat Pump:** Electric air-source heat pumps shall be modeled with electric auxiliary heat. The system shall be controlled with a multi-stage space thermostat and an *outdoor air* thermostat wired to energize auxiliary heat only on the last thermostat stage and when *outdoor air* temperature is less than 40°F.
9. **Constant Volume:** Fans shall be controlled in the same manner as in the *proposed design*; i.e., fan operation whenever the space is occupied or fan operation cycled on calls for heating and cooling. If the fan is modeled as cycling and the fan energy is included in the energy *efficiency* rating of the equipment, fan energy shall not be modeled explicitly.

TABLE 11.3.2B Number of Chillers

Total Chiller Plant Capacity	Number of Chillers
≤300 tons	1
>300 tons, < 600 tons	2 sized equally
≥600 tons	2 minimum with chillers added so that no chiller is larger than 800 tons, all sized equally

TABLE 11.3.2C Water Chiller Types

Individual Chiller Plant Capacity	Electric Chiller Type	Fossil Fuel Chiller Type
≤100 tons	Reciprocating	Single-effect absorption, direct fired
>100 tons, <300 tons	Screw	Double-effect absorption, direct fired
≥300 tons	Centrifugal	Double-effect absorption, direct fired

TABLE 11.3.2D Economizer High-Limit Shutoff

Economizer Type	High-Limit Shutoff
Air	Table 6.5.1.1.3B
Water (Integrated)	When its operation will no longer Reduce HVAC system energy
Water (Non-Integrated)	When its operation can no longer provide the cooling load

WSEC Ref	Differences
RS-29, 3	Different but can be changed
Description of Differences	
RS-29 contains additional criteria that is not included in the IECC (ASHRAE 90.1) such as internal loads (Table 3-1) and schedules (Table 3-2) RS 29 has a better set of fixed schedules	
SubTAG Recommendation	
Add WSEC language via amendment	
Consensus?	
Add WSEC language via amendment	